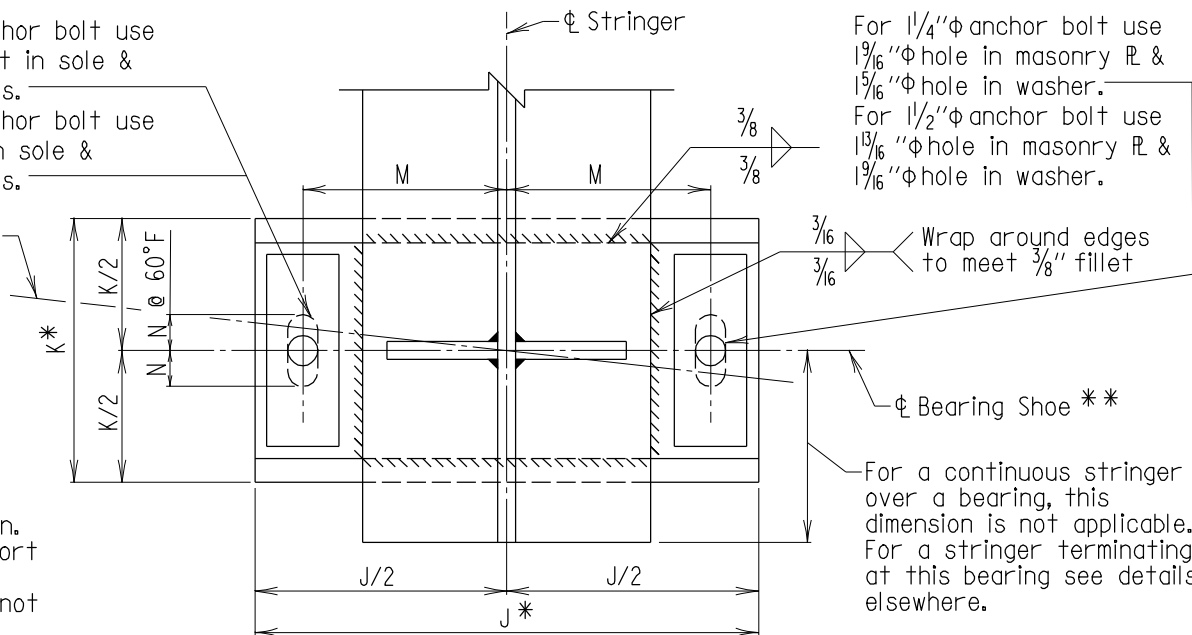


For $1\frac{1}{4}$ " ϕ anchor bolt use
 $1\frac{9}{16}$ " x 2N slot in sole &
 bronze plates.
 For $1\frac{1}{2}$ " ϕ anchor bolt use
 $1\frac{13}{16}$ " ϕ x 2N in sole &
 bronze plates.

ϕ of Brg. **

Note:
 1. Nut not shown.
 2. Pad and support
 not shown.
 3. Sliding plate not
 shown.

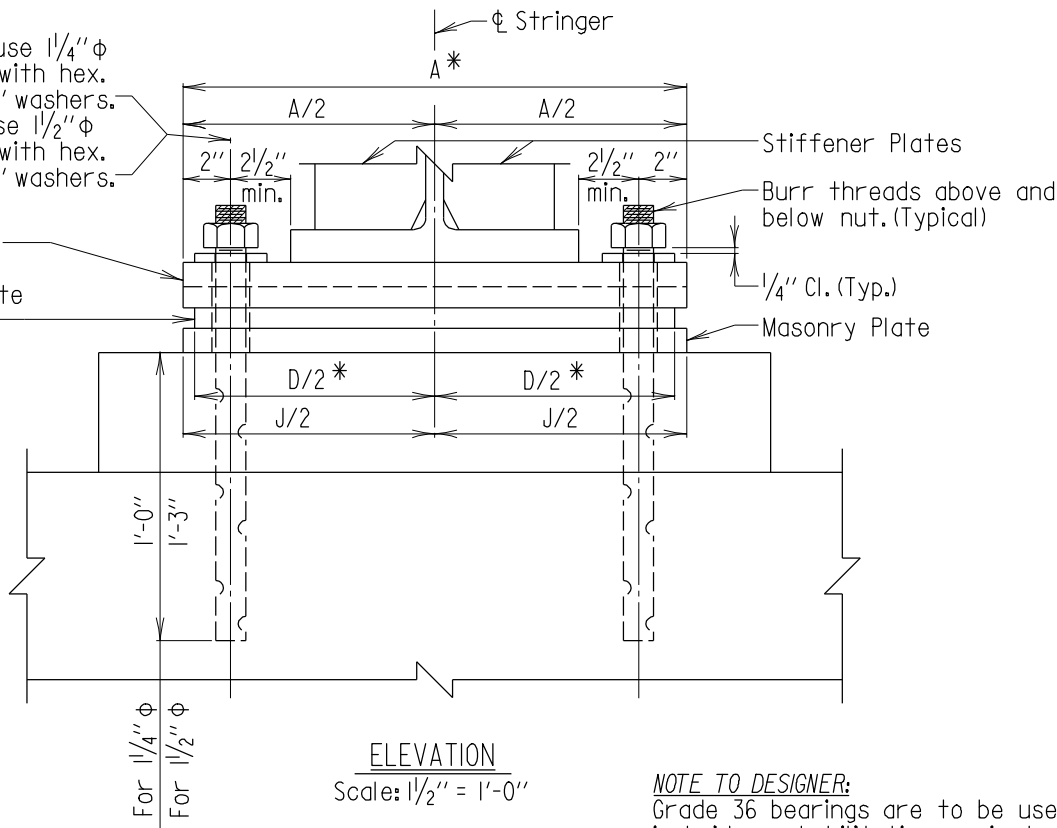


PLAN
 Scale: $1\frac{1}{2}$ " = 1'-0"

For spans under 100' use $1\frac{1}{4}$ " ϕ
 swedge anchor bolts with hex.
 nuts and 3" x $\frac{3}{8}$ " x 8" washers.
 For spans over 100' use $1\frac{1}{2}$ " ϕ
 swedge anchor bolts with hex.
 nuts and 3" x $\frac{3}{8}$ " x 8" washers.

Sole Plate

Sliding Plate
 (Bronze)



ELEVATION
 Scale: $1\frac{1}{2}$ " = 1'-0"

NOTE TO DESIGNER:
 Grade 36 bearings are to be used
 in bridge rehabilitation projects only.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and
 ϕ shoe are coincident.

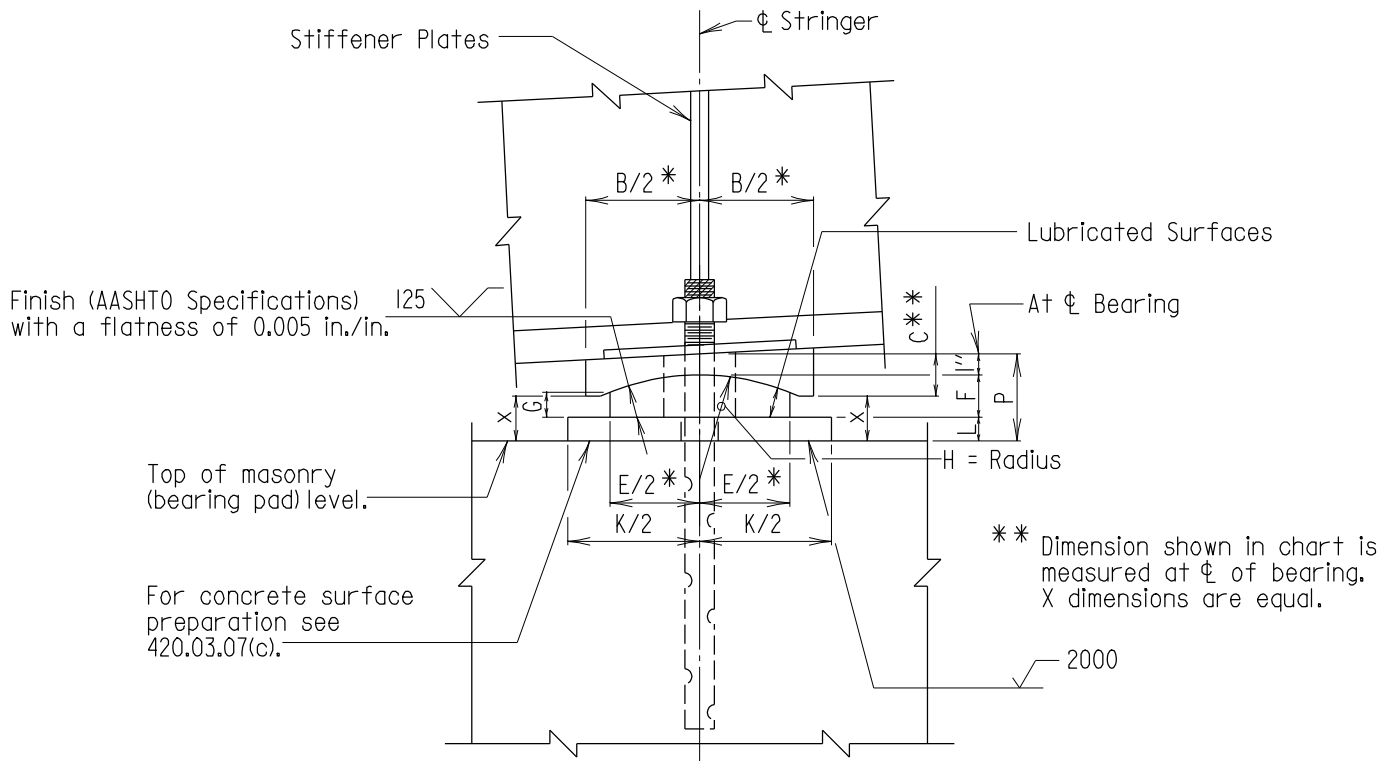
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REVISIONS	
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3-21-95	.
11-17-99	.
FHWA APPROVAL	DATE: 6-8-90
7-26-06	.

STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 OFFICE OF STRUCTURES
 BRONZE EXPANSION BEARING
 MEDIUM LENGTH SPANS
 (GRADE 36 STEEL)

STANDARD NO. BR-SS(9.01)-80-114

SHEET 1 OF 2

SUPER 1 BEARINGS



SIDE VIEW
Scale: 1 1/2" = 1'-0"

DATA SCHEDULE

DATA SCHEDULE																			
Type	Sole Plate			Sliding Plate				Radius	Masonry R			Hole Loc.		Hgt.	Loads (Kips)			Total Expansion ± (0°F - 120°)	
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Vert.	Horiz.	Dead		
ME36 - I	21	9½	1⅞	20	7½	1¾	1 ±	11	21	11	1	8½	1½	3¾	150	15	75	1	
ME36 - II	23	10½	2	22	8½	1¾	1 ±	12	23	12	1	9½	1½	3¾	200	20	100	1	
ME36 - III	25	11½	2	24	9½	1¾	1 ±	15	25	13	1	10½	1½	3¾	250	25	125	1	
ME36 - IV	26	13½	2⅜	25	11½	2⅞	1 ±	15	26	16	1	11	2	4⅞	300	30	150	1½	
ME36 - V	29	15½	2½	28	13½	2⅜	1 ±	18	29	17	1½	12½	2	4⅞	350	35	175	1¾	
ME36 - VI	30	16½	2¾	29	14½	2⅝	1 ±	18	30	20	1½	13	2¼	5⅞	400	40	200	2¼	

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 36, steel painted to match finished bridge color, convex plate shall be a self lubricating bronze bearing plate conforming to 910.01.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Rotation 1/2° ± Maximum.
- Design Masonry Bearing Load 1.0 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange.
- Unless otherwise noted, bearings shall be placed normal to Φ of stringer.
- Plates are to be shipped as units.

- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.
- Medium span range is considered 50' to 150' simple span lengths and comparable span continuous units.

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6-9-94	-
11-17-99	-
1-22-01	-

FHWA APPROVAL	11-17-99
DATE: 6-8-90	1-22-01

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 36 STEEL)

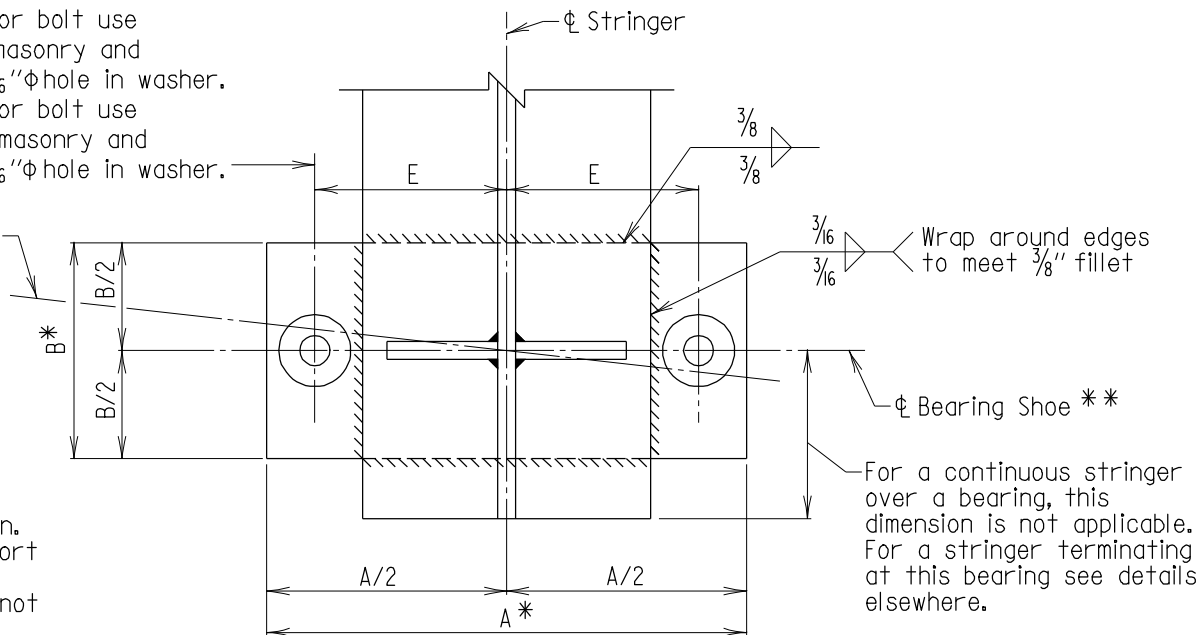
STANDARD NO. BR-SS(9.01)-80-114

SHEET 2 OF 2

For $1\frac{1}{4}"\phi$ anchor bolt use
 $1\frac{9}{16}"\phi$ hole in masonry and
sole plates $1\frac{5}{16}"\phi$ hole in washer.
For $1\frac{1}{2}"\phi$ anchor bolt use
 $1\frac{13}{16}"\phi$ hole in masonry and
sole plates $1\frac{9}{16}"\phi$ hole in washer.

ϕ of Brg. **

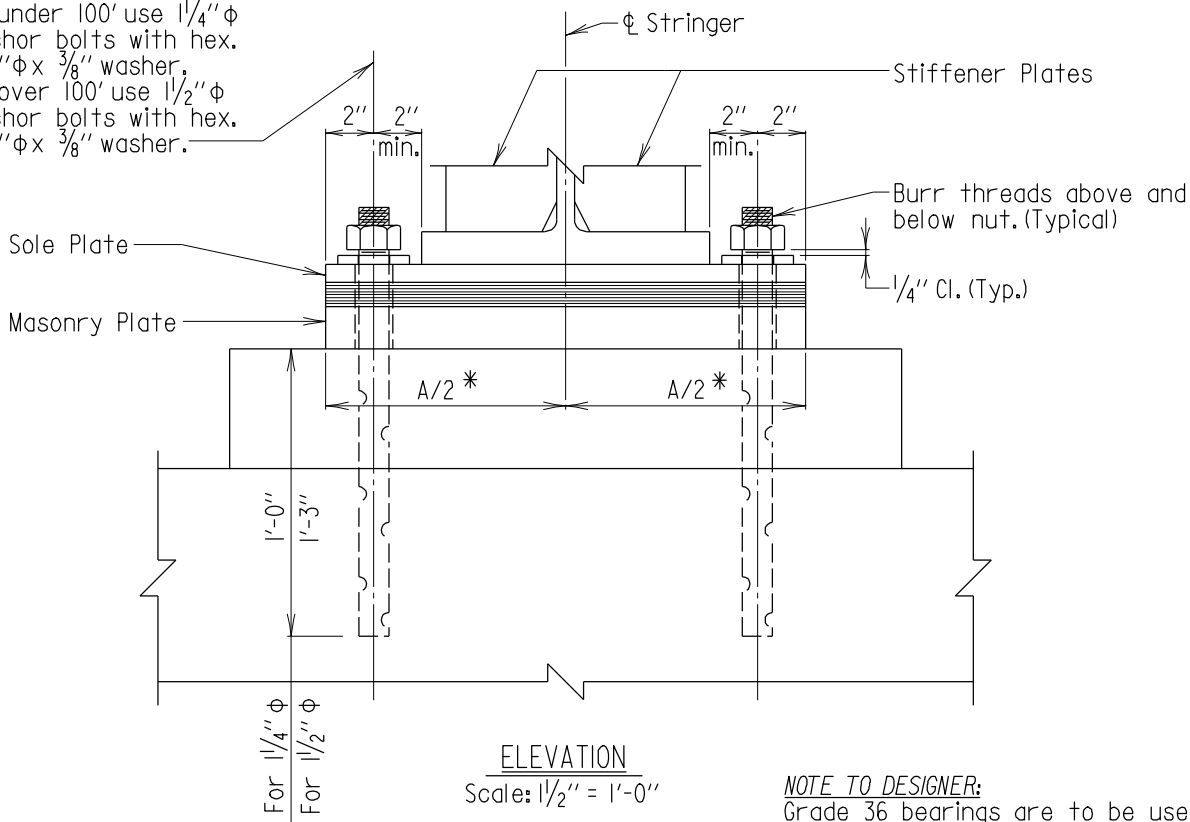
- Note:
1. Nut not shown.
 2. Pad and support not shown.
 3. Sliding plate not shown.



PLAN

Scale: $1\frac{1}{2}" = 1'-0"$

For spans under 100' use $1\frac{1}{4}"\phi$
swedge anchor bolts with hex.
nuts and $3" \phi \times \frac{3}{8}"$ washer.
For spans over 100' use $1\frac{1}{2}"\phi$
swedge anchor bolts with hex.
nuts and $3" \phi \times \frac{3}{8}"$ washer.



ELEVATION

Scale: $1\frac{1}{2}" = 1'-0"$

NOTE TO DESIGNER:
Grade 36 bearings are to be used
in bridge rehabilitation projects only.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and
 ϕ shoe are coincident.

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DATE: 6-8-90	7-26-06

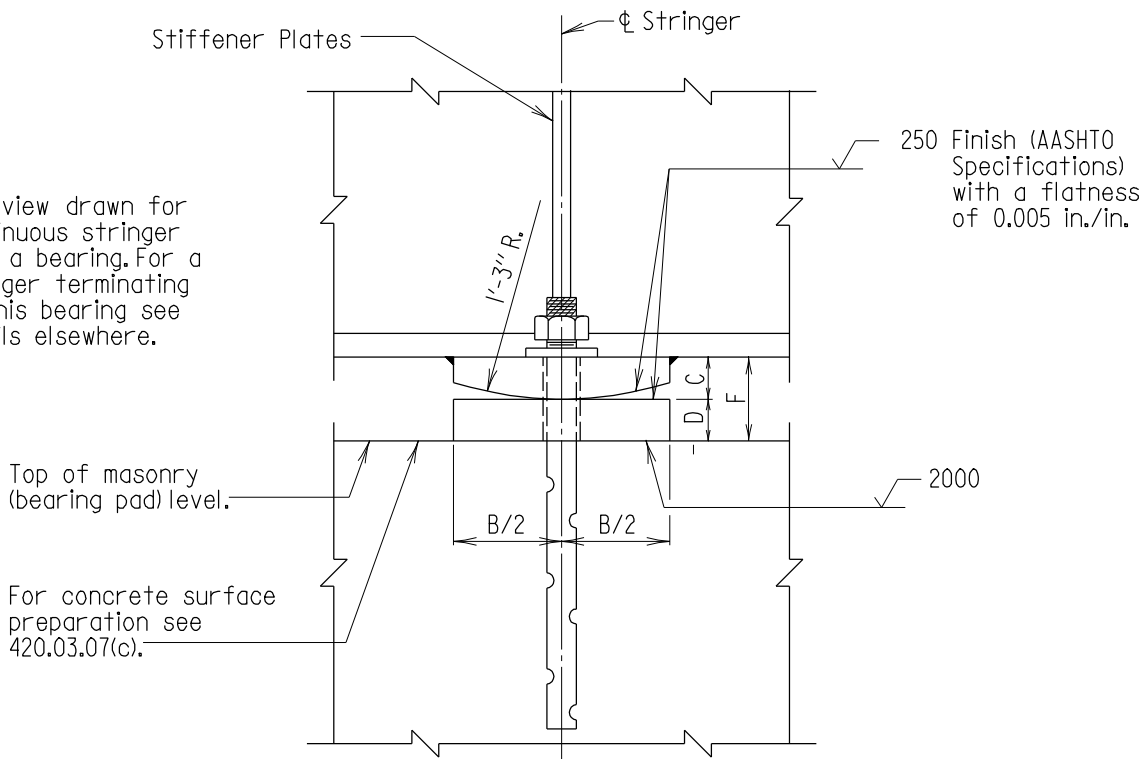
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

FIXED BEARING
MEDIUM LENGTH SPANS
(GRADE 36 STEEL)

STANDARD NO. BR-SS(9.02)-80-115

SHEET 1 OF 2

Note:
Side view drawn for continuous stringer over a bearing. For a stringer terminating at this bearing see details elsewhere.



SIDE VIEW
Scale: 1 1/2" = 1'-0"

DATA SCHEDULE

Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Loads (Kips)	
	A	B	C	A	B	D	E	F	Vert.	Dead
MF36 - I	20	9	1 3/4	20	9	1 3/4	8	3 1/2	150	75
MF36 - II	22	11	2	22	11	2	9	4	200	100
MF36 - III	24	12	2 1/4	24	12	2 1/4	10	4 1/2	250	125
MF36 - IV	26	13	2 1/2	26	13	2 1/2	11	5	300	150
MF36 - V	30	15	2 3/4	30	15	2 3/4	13	5 1/2	350	175
MF36 - VI	32	16	3	32	16	3	14	6	400	200

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 36 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Rotation $\frac{1}{2}^\circ \pm$ Maximum.
- Design Masonry Bearing Load 1.0 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.
- Medium span range is considered 50' to 150' simple span lengths.

APPROVAL

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OFFICE OF STRUCTURES

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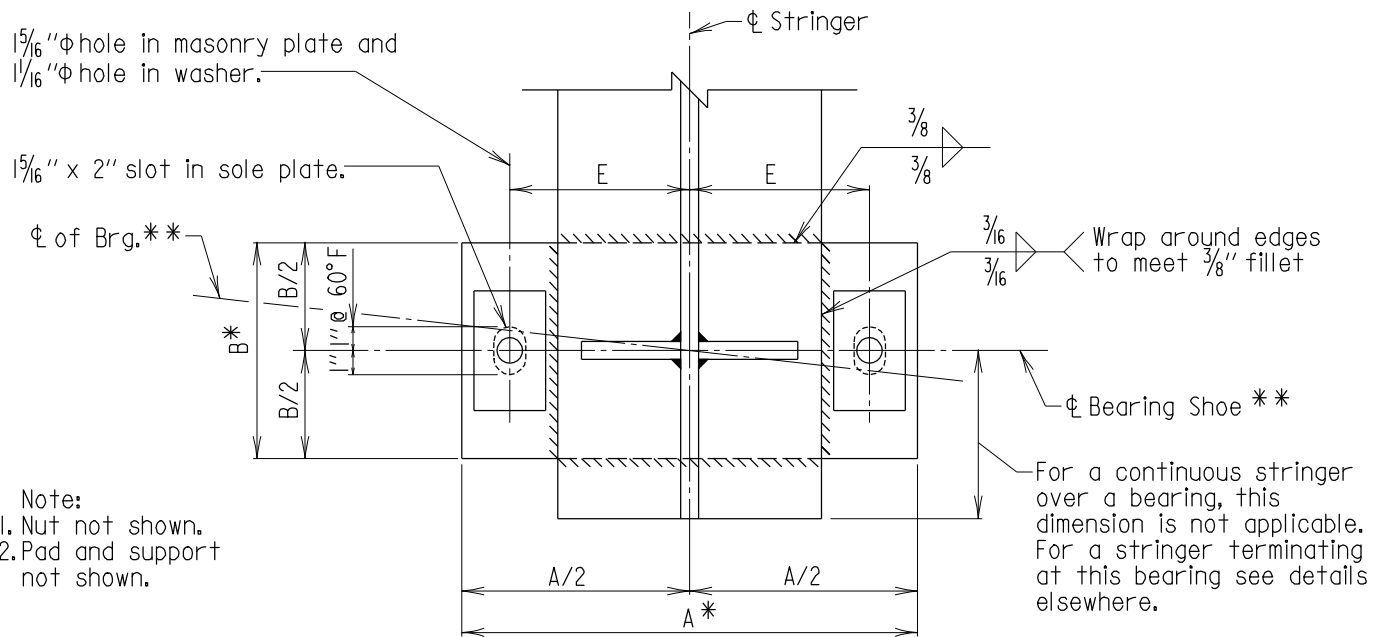
DATE: 6-8-90

STATE OF MARYLAND
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STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

FIXED BEARING
MEDIUM LENGTH SPANS
(GRADE 36 STEEL)

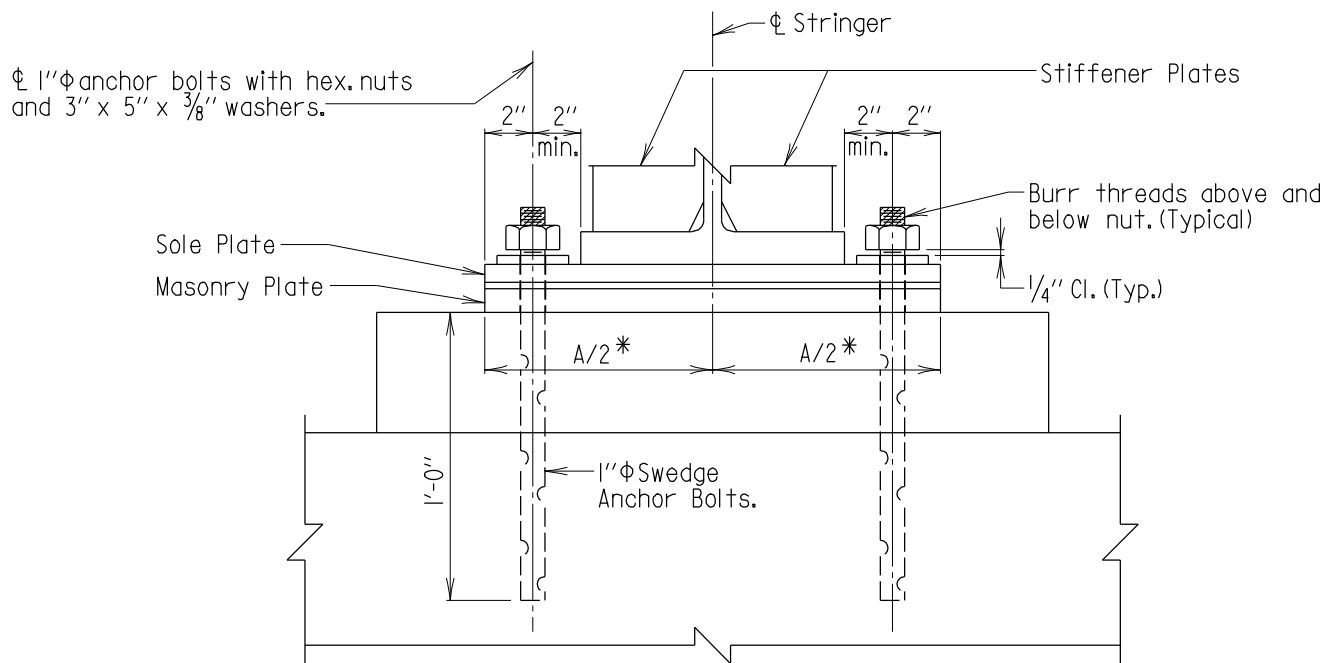
STANDARD NO. BR-SS(9.02)-80-115

SHEET 2 OF 2



Note:
1. Nut not shown.
2. Pad and support not shown.

PLAN
Scale: $1\frac{1}{2}$ " = 1'-0"



ELEVATION
Scale: $1\frac{1}{2}$ " = 1'-0"

NOTE TO DESIGNER:
Grade 36 bearings are to be used in bridge rehabilitation projects only.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

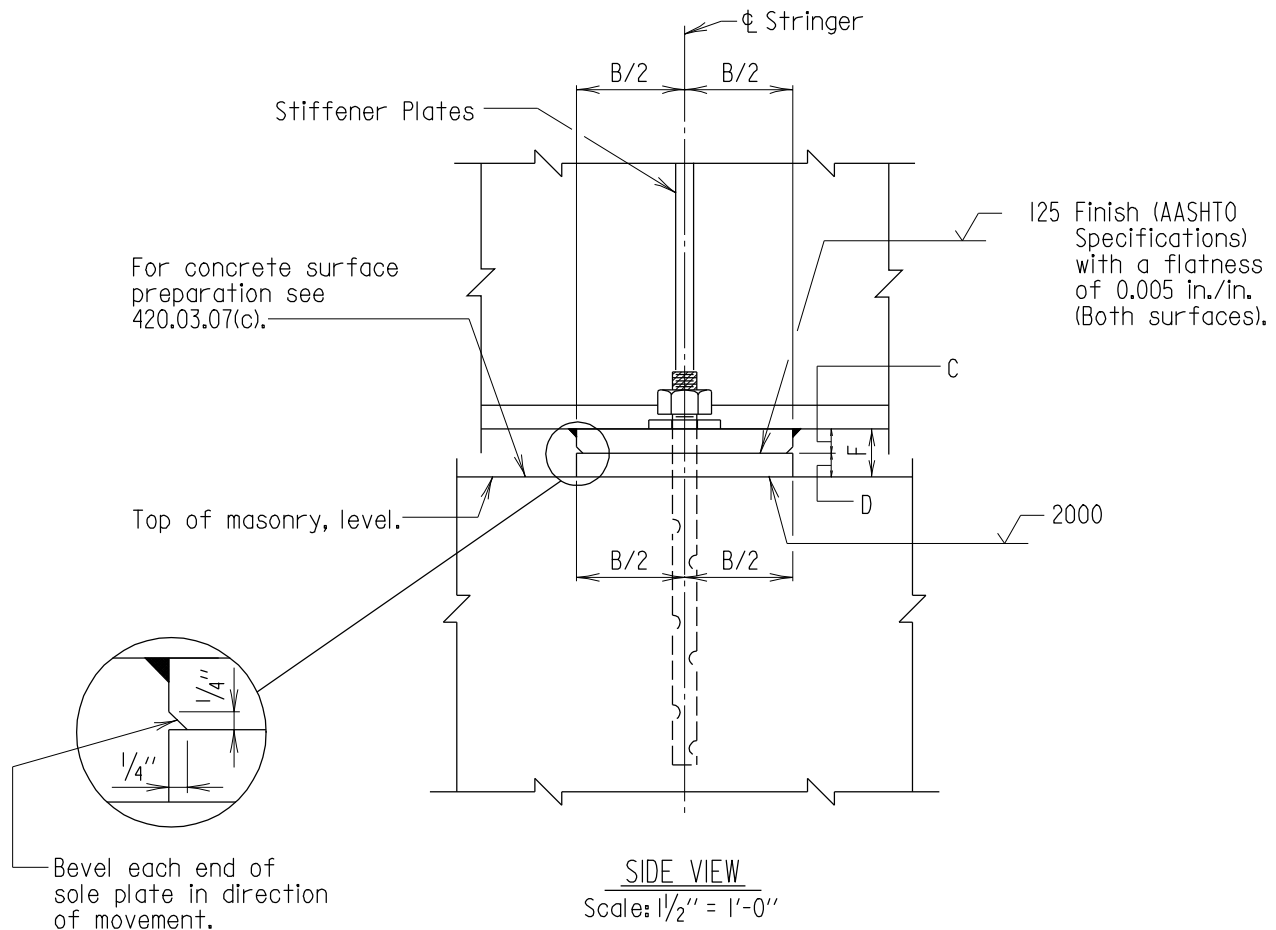
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7-26-06	.

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DATE: 6-8-90

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES
EXPANSION BEARING
SHORT LENGTH SPANS
(GRADE 36 STEEL)

STANDARD NO. BR-SS(9.03)-81-128

SHEET 1 OF 2



DATA SCHEDULE										
Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Loads (Kips)	
	A	B	C	A	B	D	E	F	Vert.	Dead
SE36 - I	17	9	1	17	9	1	6 1/2	2	70	16
SE36 - II	19	9	1	19	9	1	7 1/2	2	85	23
SE36 - III	21	9	1	21	9	1	8 1/2	2	100	34

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 36 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Design Bearing Load 0.7 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at ϕ of bearing.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

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DATE: 6-8-90	1-22-01

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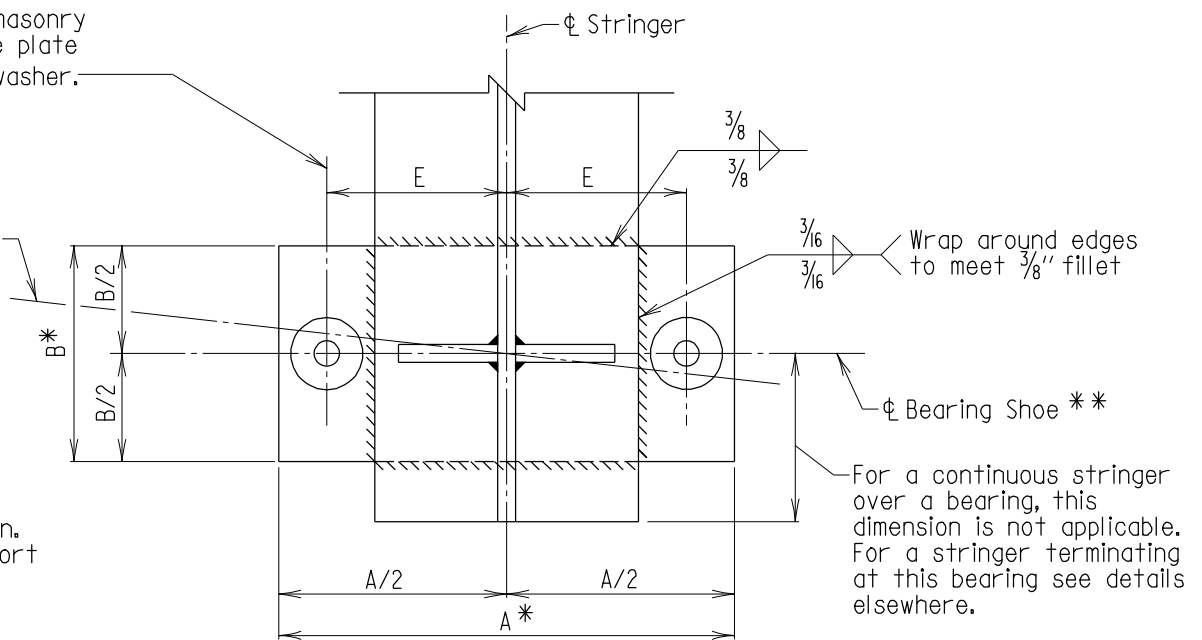
EXPANSION BEARING
SHORT LENGTH SPANS
(GRADE 36 STEEL)

STANDARD NO. BR-SS(9.03)-81-128

SHEET 2 OF 2

$1\frac{5}{16}$ " ϕ hole in masonry plate and sole plate
 $1\frac{1}{16}$ " ϕ hole in washer.

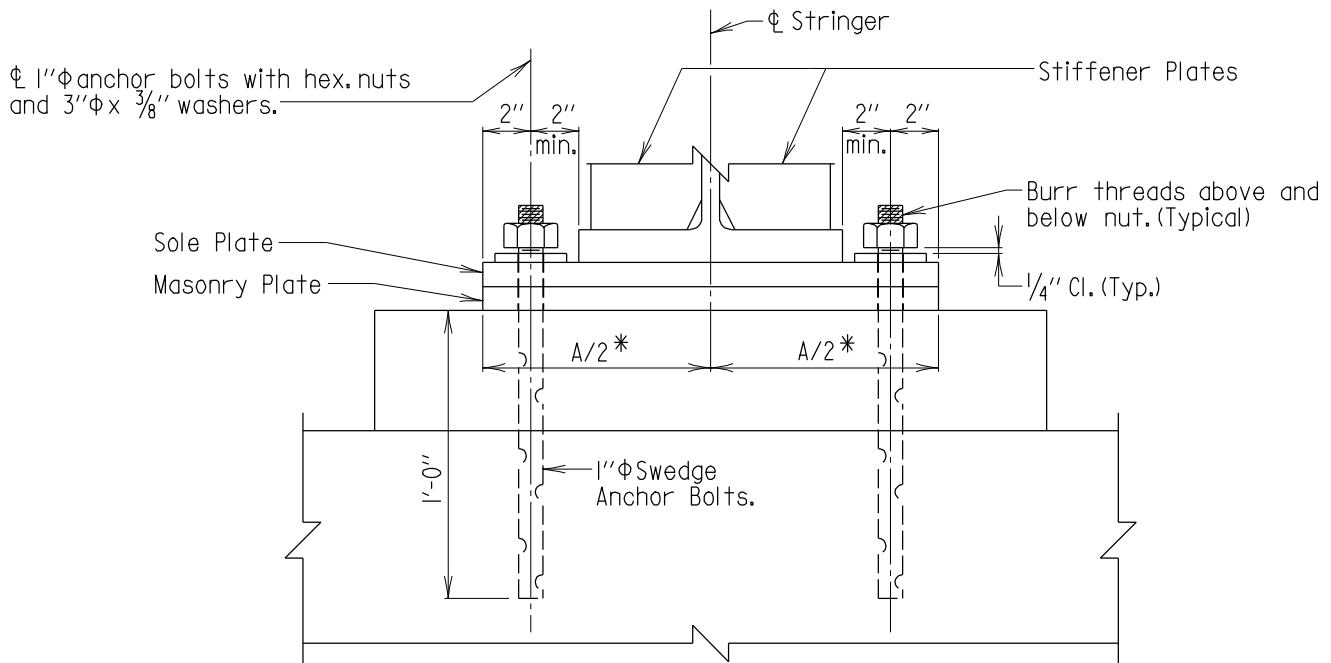
ϕ of Brg. **



Note:
 1. Nut not shown.
 2. Pad and support not shown.

PLAN

Scale: $1\frac{1}{2}$ " = 1'-0"



ELEVATION

Scale: $1\frac{1}{2}$ " = 1'-0"

NOTE TO DESIGNER:
 Grade 36 bearings are to be used in bridge rehabilitation projects only.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

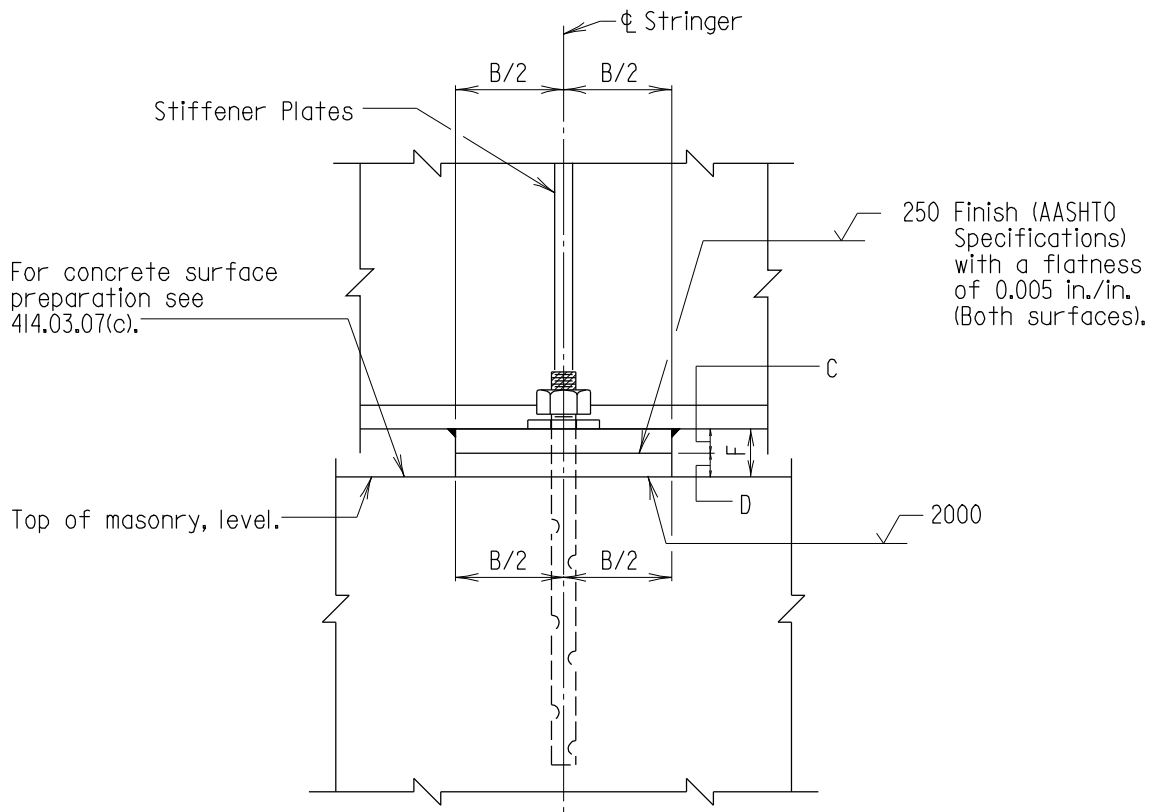
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11-17-99	.
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7-26-06	.

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 DATE: 6-8-90

STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 OFFICE OF STRUCTURES
 FIXED BEARING
 SHORT LENGTH SPANS
 (GRADE 36 STEEL)

STANDARD NO. BR-SS(9.04)-81-129

SHEET 1 OF 2



SIDE VIEW
Scale: 1 1/2" = 1'-0"

DATA SCHEDULE										
Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Loads (Kips)	
	A	B	C	A	B	D	E	F	Vert.	Dead
SF36 - I	17	9	1	17	9	1	6 1/2	2	70	16
SF36 - II	19	9	1	19	9	1	7 1/2	2	85	23
SF36 - III	21	9	1	21	9	1	8 1/2	2	100	34

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be A 709 Grade 36 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Design Bearing Load 0.7 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at ϕ of bearing.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
- All anchor bolts and washers shall be unpainted A 709 Grade 36 galvanized steel. All nuts shall be unpainted A 307 galvanized steel.

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DATE: 6-8-90	11-17-99

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FIXED BEARING
SHORT LENGTH SPANS
(GRADE 36 STEEL)

STANDARD NO. BR-SS(9.04)-81-129

SHEET 2 OF 2

For $1\frac{1}{4}" \phi$ anchor bolt use
 $1\frac{9}{16}" \times 2N$ slot in sole &
 bronze plates.
 For $1\frac{1}{2}" \phi$ anchor bolt use
 $1\frac{13}{16}" \phi \times 2N$ in sole &
 bronze plates.

ϕ of Brg. **

K^*

$K/2$

N

$N @ 60^\circ F$

$K/2$

M

M

$3/8$

$3/8$

$3/16$

$3/16$

Wrap around edges
to meet $3/8"$ fillet

ϕ Bearing Shoe **

For a continuous stringer
over a bearing, this
dimension is not applicable.
For a stringer terminating
at this bearing see details
elsewhere.

$J/2$

$J/2$

J^*

Note:

1. Nut not shown.
2. Pad and support
not shown.
3. Sliding plate not shown.
4. Additional anchor bolts
required for spans 150' or
greater see sheet 3 of 3.

PLAN

Scale: $1\frac{1}{2}" = 1'-0"$

For spans under 100' use $1\frac{1}{4}" \phi$
 swedge anchor bolts with hex.
 nuts and $3" \times \frac{3}{8}" \times 8"$ washers.
 For spans over 100' use $1\frac{1}{2}" \phi$
 swedge anchor bolts with hex.
 nuts and $3" \times \frac{3}{8}" \times 8"$ washers.

Sole Plate

Sliding Plate
(Bronze)

ϕ Stringer

A^*

$A/2$

$A/2$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

min.

$2\frac{1}{2}"$

$2\frac{1}{2}"$

$2\frac{1}{2}"$

Stiffener Plates

Burr threads above and
below nut. (Typical)

$1/4"$ Cl. (Typ.)

Masonry Plate

$D/2^*$

$D/2^*$

$J/2$

$J/2$

$1'-0"$

$1'-3"$

$1'-0"$

$1'-3"$

$1'-0"$

$1'-3"$

$1'-0"$

$1'-3"$

$1'-0"$

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$1'-3"$

$1'-0"$

$1'-3"$

$1'-0"$

$1'-3"$

$1'-0"$

For $1\frac{1}{4}" \phi$
 For $1\frac{1}{2}" \phi$

ELEVATION

Scale: $1\frac{1}{2}" = 1'-0"$

NOTE TO DESIGNER:

Grade 50 bearings are to be used
 in new bridge projects.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and
 ϕ shoe are coincident.

APPROVAL	
<i>E. S. Friedman</i> DIRECTOR	OFFICE OF STRUCTURES
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.	.
FHWA APPROVAL	.
DATE:	.

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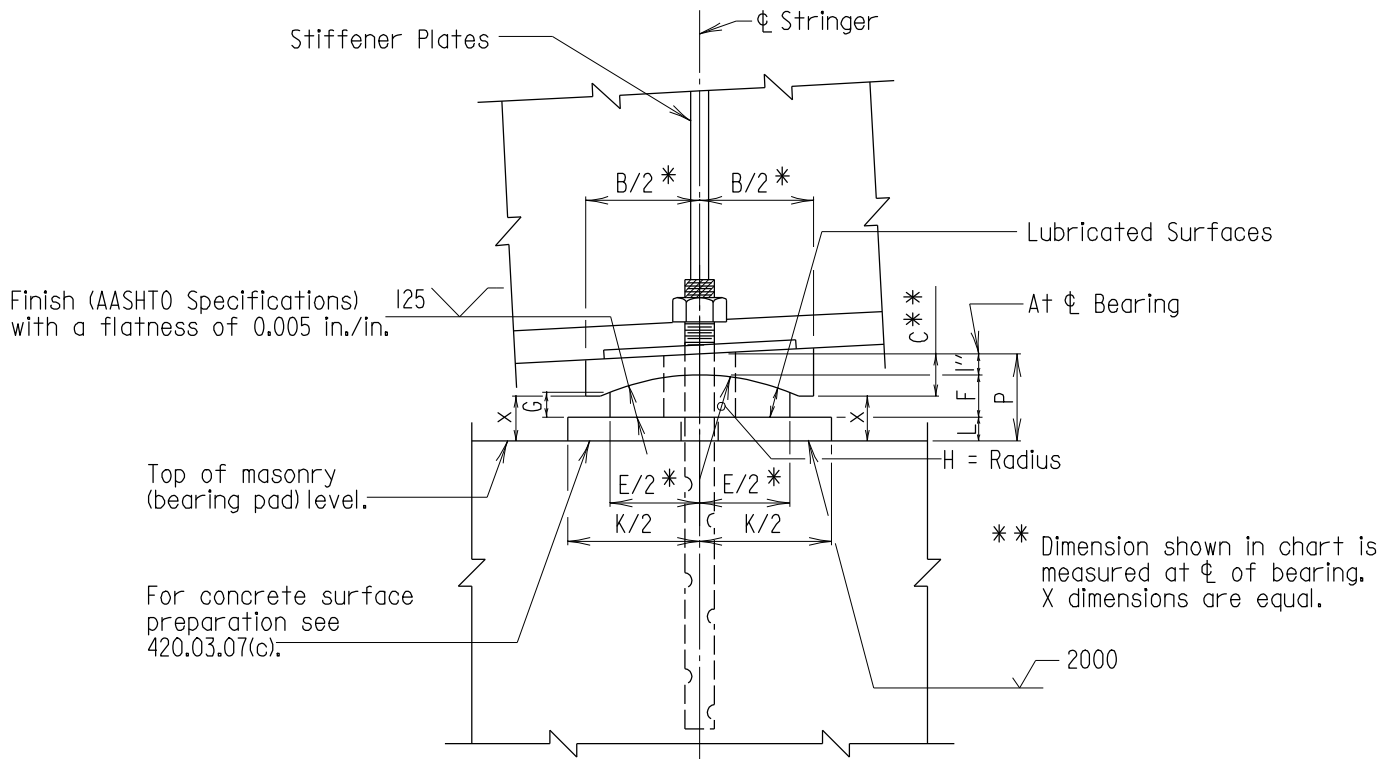
BRONZE EXPANSION BEARING
 MEDIUM LENGTH SPANS
 (GRADE 50 STEEL)

STANDARD NO. BR-SS(9.05)-99-335

SHEET 1 OF 3

SUPER - BEARINGS





SIDE VIEW
Scale: 1 1/2" = 1'-0"

DATA SCHEDULE

Type	Sole Plate			Sliding Plate				Radius	Masonry P			Hole Loc.		Hgt.	Loads (Kips)			Total Expansion ± (0°F - 120°)
	A	B	C	D	E	F	G		J	K	L	M	N		Vert.	Horiz.	Dead	
ME50 - I	21	9 1/2	1 3/4	20	7 1/2	1 3/4	1 ±	11	21	11	1	8 1/2	1 1/2	3 3/4	145	10	70	1 1/2
ME50 - II	23	10 1/2	1 7/8	22	8 1/2	1 3/4	1 ±	12	23	12	1	9 1/2	1 1/2	3 3/4	185	15	90	1 1/2
ME50 - III	25	11 1/2	2	24	9 1/2	1 3/4	1 ±	15	25	13	1	10 1/2	1 1/2	3 3/4	225	20	110	1 1/2
ME50 - IV	26	14 1/2	2 1/8	25	12 1/2	2	1 ±	18	26	16	1	11	2	4	310	30	155	2 1/2
ME50 - V	29	15 1/2	2 3/8	28	13 1/2	2 1/4	1 ±	18	29	17	1 1/2	12 1/2	2	4 3/4	375	35	185	2 1/2
ME50 - VI	30	16 1/2	2 1/2	29	14 1/2	2 3/8	1 ±	19	30	20	1 1/2	13	2 1/2	4 7/8	420	40	210	3 1/2
ME50 - VII	31	18 1/2	2 1/2	30	15 1/2	2 3/8	1 ±	22	31	23	2	13 1/2	3	5 3/8	460	45	230	4 1/2
ME50 - VIII	32	19 1/2	2 5/8	31	16 1/2	2 1/2	1 ±	23	32	24	2 1/2	14	3 1/2	6	510	50	255	5 1/2

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color, convex plate shall be a self lubricating bronze bearing plate conforming to 910.01.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Rotation 1/2° ± Maximum.
- Design Masonry Bearing Load 1.0 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange.
- Unless otherwise noted, bearings shall be placed normal to Φ of stringer.
- Plates are to be shipped as units.

- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.
- Medium span range is considered 50' to 150' simple span lengths and comparable span continuous units.

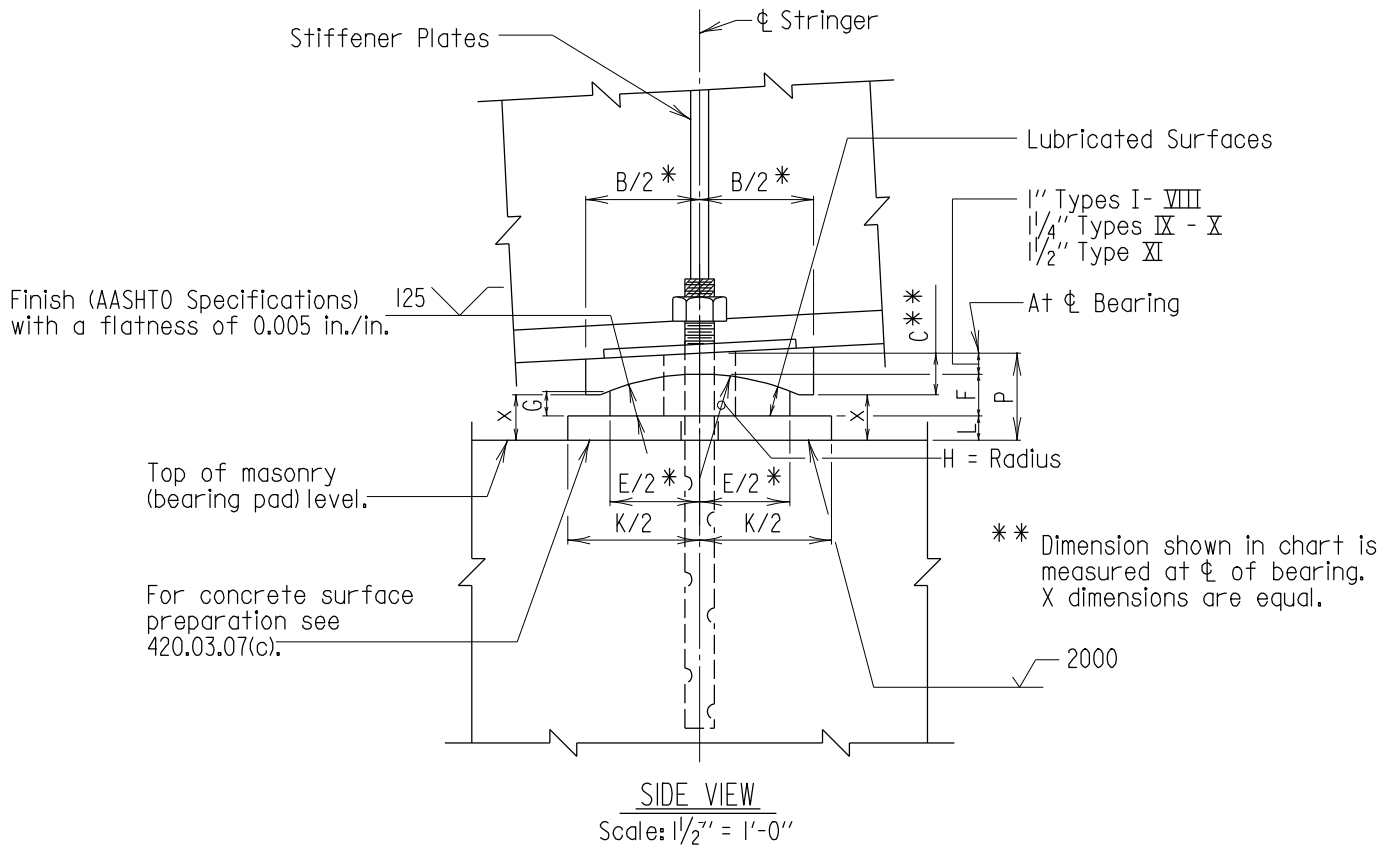
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<i>[Signature]</i> DIRECTOR	OFFICE OF STRUCTURES
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STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.05)-99-335

SHEET 2 OF 3



DATA SCHEDULE																		
Type	Sole Plate			Sliding Plate				Radius	Masonry R			Hole Loc.		Hgt.	Max. Bottom Fl. W.	Strength Limits State Loads	Service Limit State Loads	Allow Exp. (+/-) (Note 4)
	A	B	C	D	E	F	G		J	K	L	M	N	P				
ME50 - I	21	9 1/2	1 3/4	20	7 1/2	1 3/4	1 ±	11	21	11	1	8 1/2	1 1/2	3 3/4	12	200 k	120 k	.
ME50 - II	23	10 1/2	1 7/8	22	8 1/2	1 3/4	1 ±	12	23	12	1	9 1/2	1 3/4	3 3/4	14	300 k	185 k	1
ME50 - III	25	12 1/2	2	24	9 1/2	1 3/4	1 ±	15	25	13	1 1/4	10 1/2	2	4	16	400 k	250 k	1 1/4
ME50 - IV	27	13 1/2	2 1/8	26	11	2	1 ±	16	27	16	1 1/4	11 1/2	2 1/4	4 1/4	18	500 k	310 k	1 1/2
ME50 - V	29	15 1/2	2 3/8	28	13	2 1/4	1 ±	18	29	17	1 1/2	12 1/2	2 1/2	4 3/4	20	600 k	375 k	1 3/4
ME50 - VI	31	17	2 1/2	30	14 1/2	2 3/8	1 ±	20	31	20	1 1/2	13 1/2	2 3/4	4 7/8	22	700 k	440 k	2
ME50 - VII	33	18 1/2	2 1/2	32	15 1/2	2 3/8	1 ±	23	33	23	2	14 1/2	3	5 3/8	24	800 k	505 k	2 1/4
ME50 - VIII	35	19	2 5/8	34	16 1/2	2 1/2	1 ±	23	35	24	2 1/2	15 1/2	3 1/4	6	26	900 k	570 k	2 1/2
ME50 - IX	37	21	3	36	17 1/2	2 3/4	1 1/4 ±	26	37	25	2 1/2	16 1/2	3 1/2	6 1/2	28	1000 k	635 k	2 3/4
ME50 - X	39	21	3	38	17 1/2	2 3/4	1 1/4 ±	26	39	26	2 3/4	17 1/2	4	6 3/4	30	1100 k	700 k	3 1/4
ME50 - XI	41	22	3 1/4	40	18	3	1 1/2 ±	28	41	27	3	18 1/2	4 1/2	7 1/2	32	1200 k	760 k	3 3/4

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color, convex plate shall be a self lubricating bronze bearing plate conforming to 910.01.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Allowable expansion is based on a 60°F. temperature change from center slot setting at 60°F.
- Compressive strength of concrete bearing area shall be 3.5 ksi or greater.
- Top of sole plate must be beveled to fit grade of bottom flange.
- Unless otherwise noted, bearings shall be placed normal to Φ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- All anchor bolts and washers shall be unpainted ASTM F 1554 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 563 galvanized steel.
- The maximum design rotation due to strength load combinations (θ_u) = 0.75".

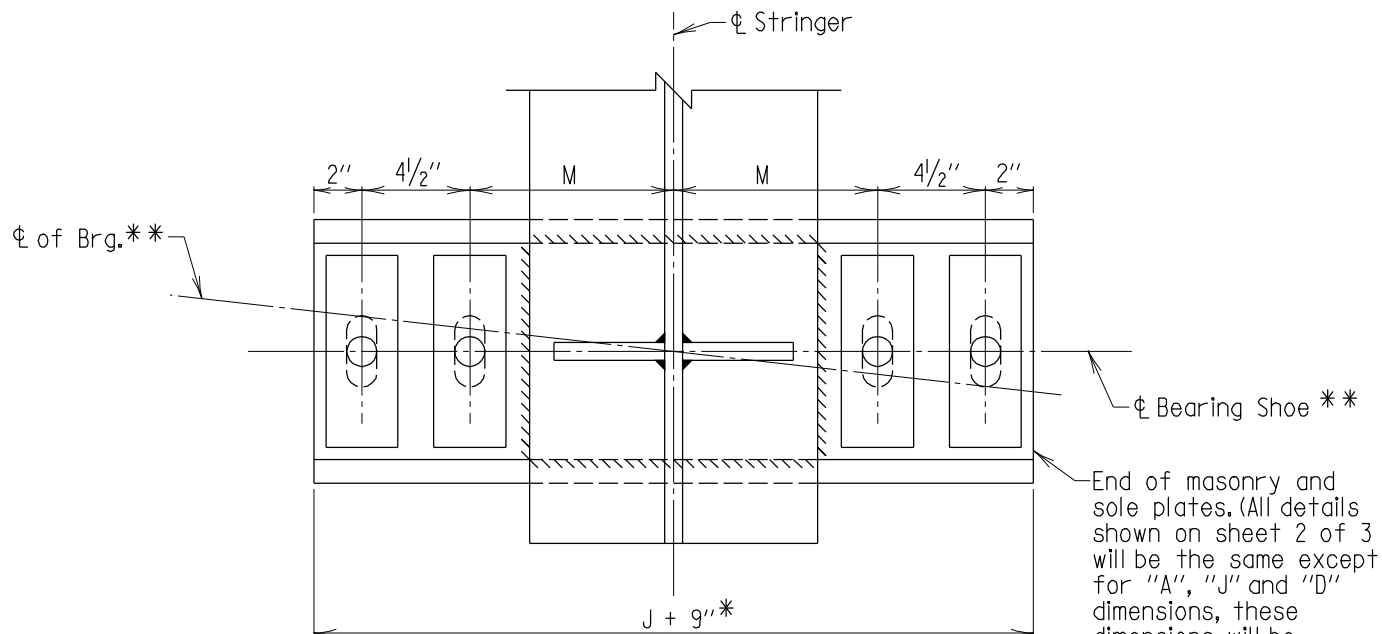
STATE OF MARYLAND
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BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)



1-22-01
10-9-07
1-21-09
4-21-09

SHEET 2 OF 3



- Note:
1. Nut not shown.
 2. Pad and support not shown.
 3. Sliding plate not shown.

PLAN
FOR ALL GIRDERS WITH SPAN LENGTHS 150' OR GREATER
Scale: 1 1/2" = 1'-0"

Note:
To accommodate AASHTO Requirements, bearings for girders 150' or greater shall be extended to accommodate 2 additional bolts. Size and details of all 4 anchor bolts to be the same as that required for 2 bolt bearings.

* Edges may be left as cut or cast.

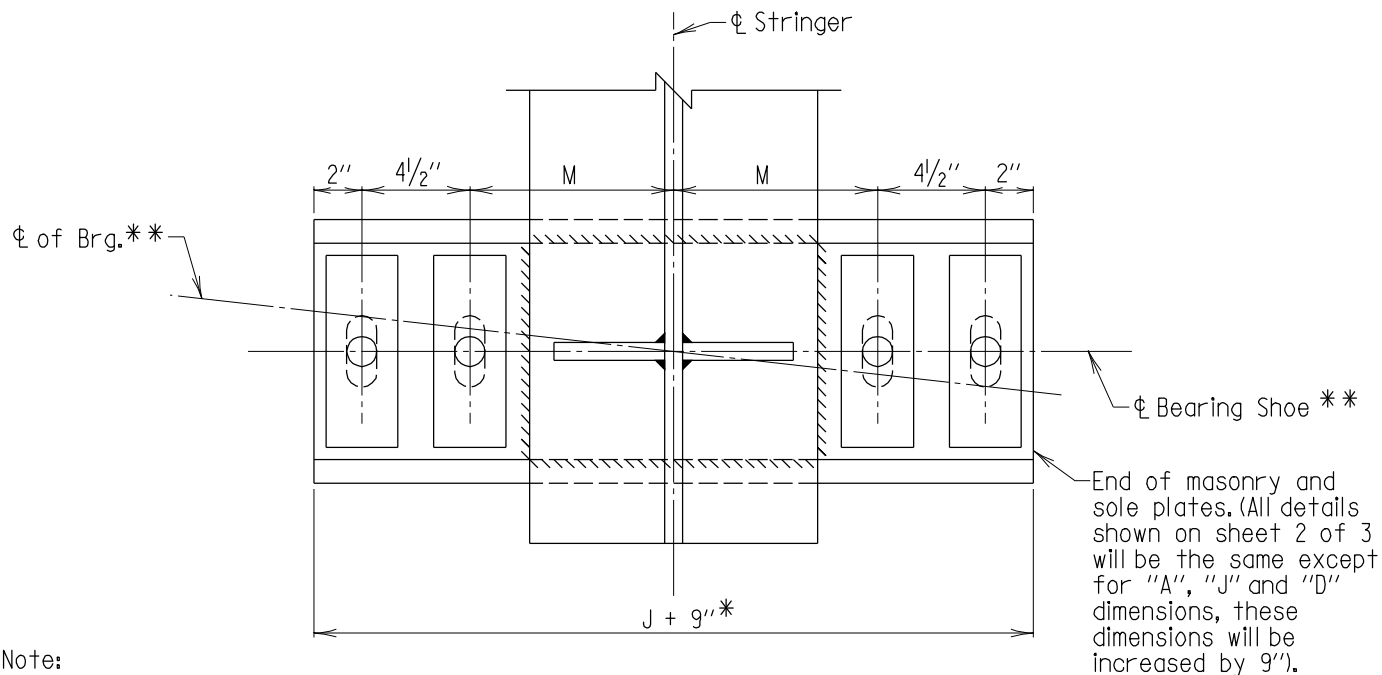
** Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

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STATE OF MARYLAND
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OFFICE OF STRUCTURES
BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.05)-99-335

SHEET 3 OF 3



PLAN
FOR ALL GIRDERS WITH SPAN LENGTHS 150' OR GREATER
Scale: 1 1/2" = 1'-0"

Note:
Bearings for girders 150' or greater shall be extended to accommodate 2 additional bolts. Size and details of all 4 anchor bolts to be the same as that required for 2 bolt bearings.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

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BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.05)-99-335(L)

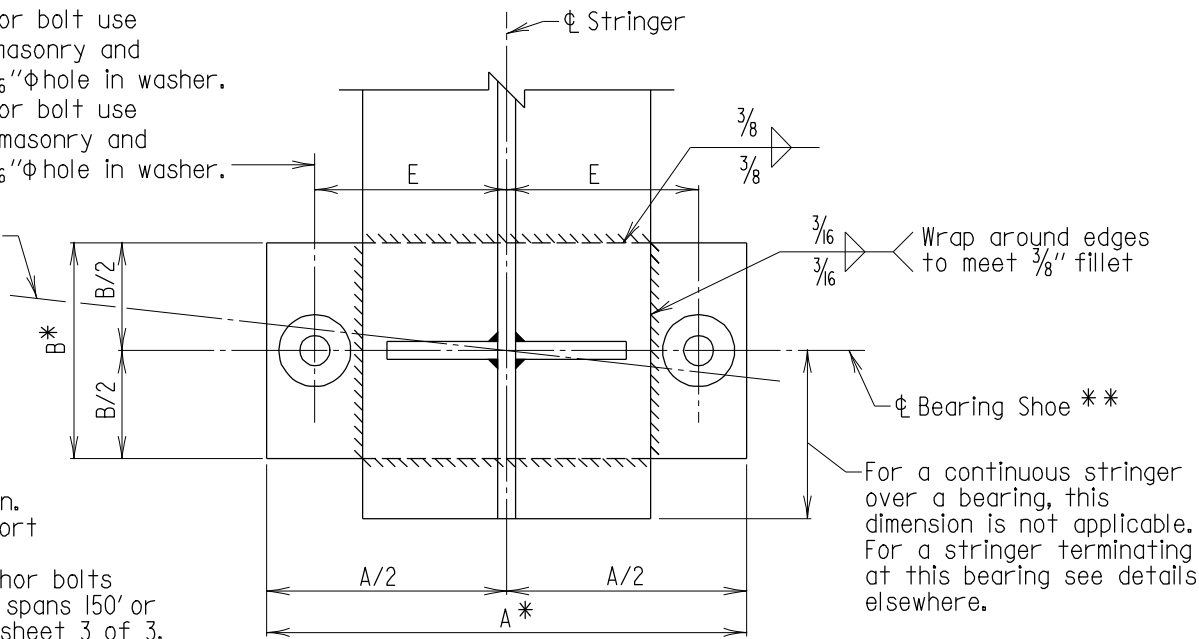
SHEET 3 OF 3



SUPER - BEARINGS

For $1\frac{1}{4}"\phi$ anchor bolt use
 $1\frac{3}{16}"\phi$ hole in masonry and
sole plates $1\frac{5}{16}"\phi$ hole in washer.
For $1\frac{1}{2}"\phi$ anchor bolt use
 $1\frac{3}{16}"\phi$ hole in masonry and
sole plates $1\frac{9}{16}"\phi$ hole in washer.

ϕ of Brg. **

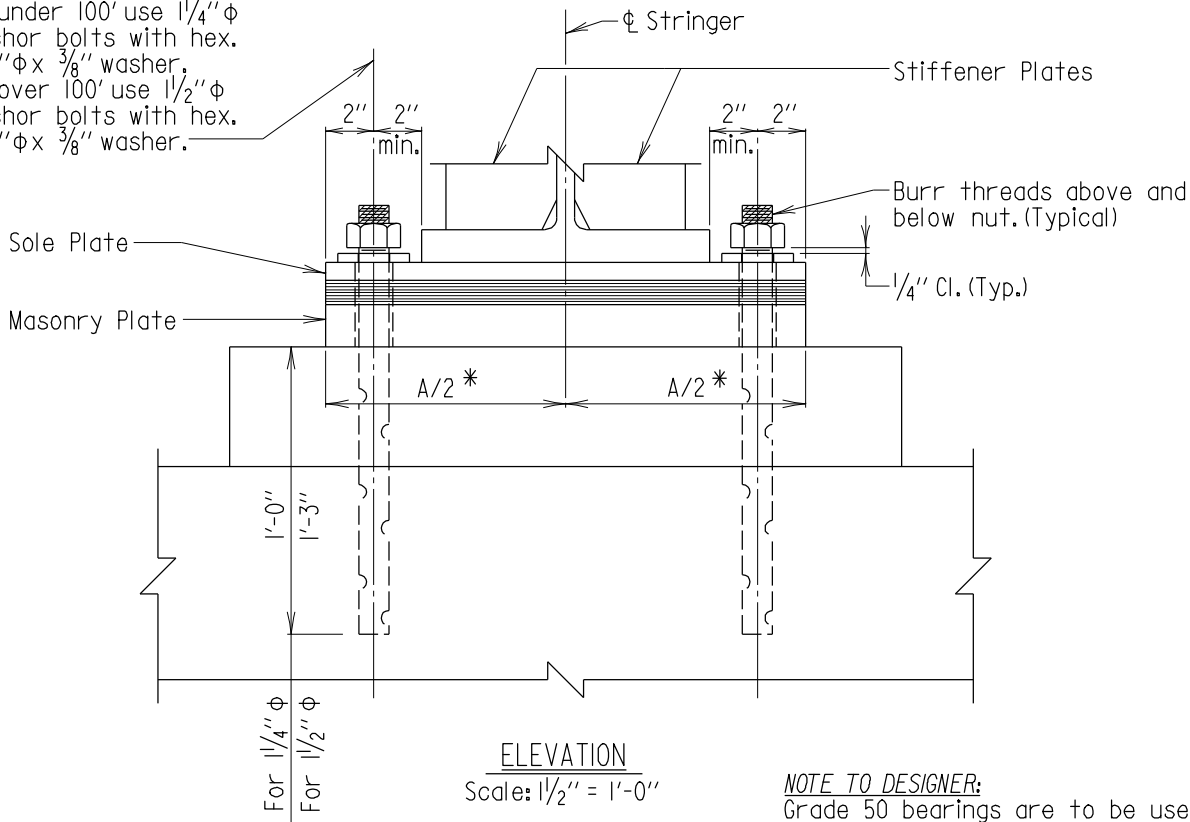


- Note:
1. Nut not shown.
2. Pad and support
not shown.
3. Additional anchor bolts
required for spans 150' or
greater see sheet 3 of 3.

PLAN

Scale: $1\frac{1}{2}" = 1'-0"$

For spans under 100' use $1\frac{1}{4}"\phi$
swedge anchor bolts with hex.
nuts and $3" \phi \times \frac{3}{8}"$ washer.
For spans over 100' use $1\frac{1}{2}"\phi$
swedge anchor bolts with hex.
nuts and $3" \phi \times \frac{3}{8}"$ washer.



NOTE TO DESIGNER:
Grade 50 bearings are to be used
in new bridge projects.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and
 ϕ shoe are coincident.

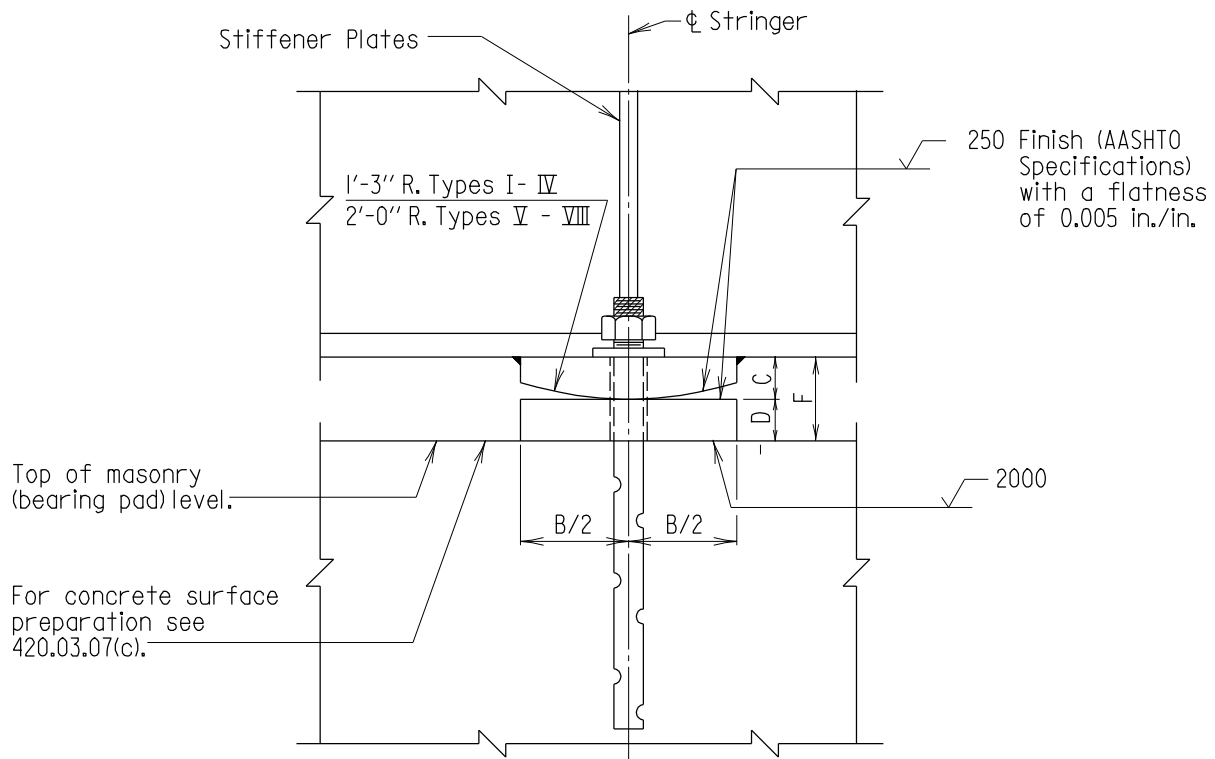
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FIXED BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.06)-99-336

SHEET 1 OF 3





DATA SCHEDULE

Type	Sole Plate			Masonry R			Hole Loc.		Hgt.		Loads (Kips)	
	A	B	C	A	B	D	E	F			Vert.	Dead
MF50 - I	20	9	1 3/4	20	9	1 3/4	8	3 1/2			175	85
MF50 - II	22	11	1 7/8	22	11	1 7/8	9	3 3/4			240	120
MF50 - III	24	12	2	24	12	2	10	4			285	140
MF50 - IV	26	13	2 1/4	26	13	2 1/4	11	4 1/2			335	165
MF50 - V	30	15	2 1/2	30	15	2 1/2	13	5			445	220
MF50 - VI	32	16	2 3/4	32	16	2 3/4	14	5 1/2			510	255
MF50 - VII	34	18	2 7/8	34	18	2 7/8	15	5 3/4			610	305
MF50 - VIII	36	20	3	36	20	3	16	6			715	355

Note:

Note: All dimensions are in inches.

- Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Rotation $\frac{1}{2}^\circ \pm$ Maximum.
- Design Masonry Bearing Load 1.0 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.
- Medium span range is considered 50' to 150' simple span lengths.

APPROVAL

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OFFICE OF STRUCTURES

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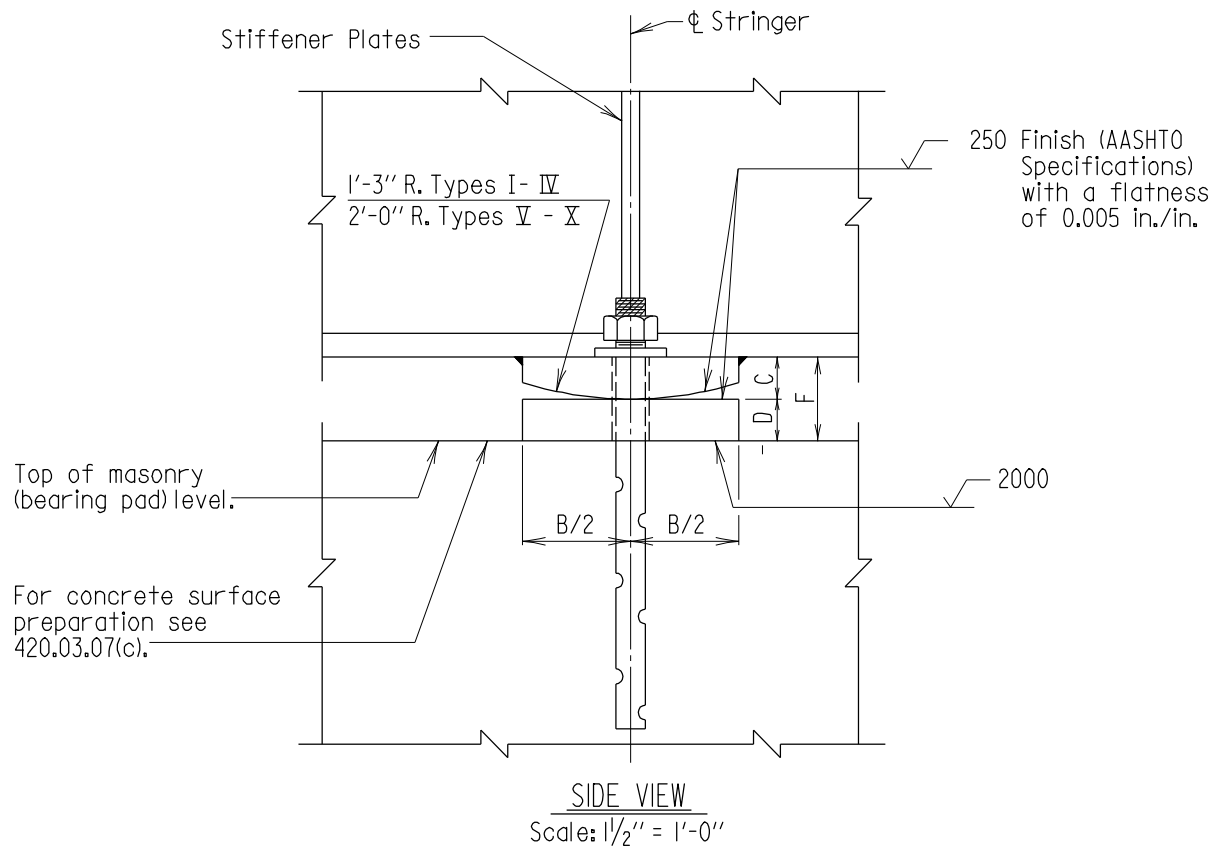
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FIXED BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.06)-99-336

SHEET 2 OF 3



DATA SCHEDULE												
Type	Sole Plate			Masonry R			Hole Loc.	Hgt.	Max Bottom Fl. Width	Strength Limit State Loads	Service Limit State Loads	
	A	B	C	A	B	D	E	F				
MF50 - I	20	9	1¾	20	9	1¾	8	3½	12	300k	185k	
MF50 - II	22	11	1⅞	22	11	1⅞	9	3¾	14	400k	250k	
MF50 - III	24	12	2	24	12	2	10	4	16	500k	310k	
MF50 - IV	26	13	2¼	26	13	2¼	11	4½	18	600k	375k	
MF50 - V	30	15	2½	30	15	2½	13	5	22	700k	440k	
MF50 - VI	32	16	2¾	32	16	2¾	14	5½	24	800k	505k	
MF50 - VII	34	18	2⅞	34	18	2⅞	15	5¾	26	900k	570k	
MF50 - VIII	36	20	3	36	20	3	16	6	28	1000k	635k	
MF50 - IX	38	22	3	38	22	3	17	6	30	1100k	700k	
MF50 - X	40	24	3¼	40	24	3¼	18	6½	32	1200k	760k	

Note: All dimensions are in inches.

Note:

1. Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
2. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
3. 1000 RMS (Finish all over) except where otherwise noted.
4. Compressive strength of concrete bearing area shall be 3.5 ksi or greater.
5. Top of sole plate must be beveled to fit grade of bottom flange.
6. Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
7. Plates are to be shipped as units.

8. If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
9. All anchor bolts and washers shall be unpainted ASTM F 1554 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 563 galvanized steel.
10. The maximum design rotation due to strength load combinations $(\theta_u) = 0.75''$.

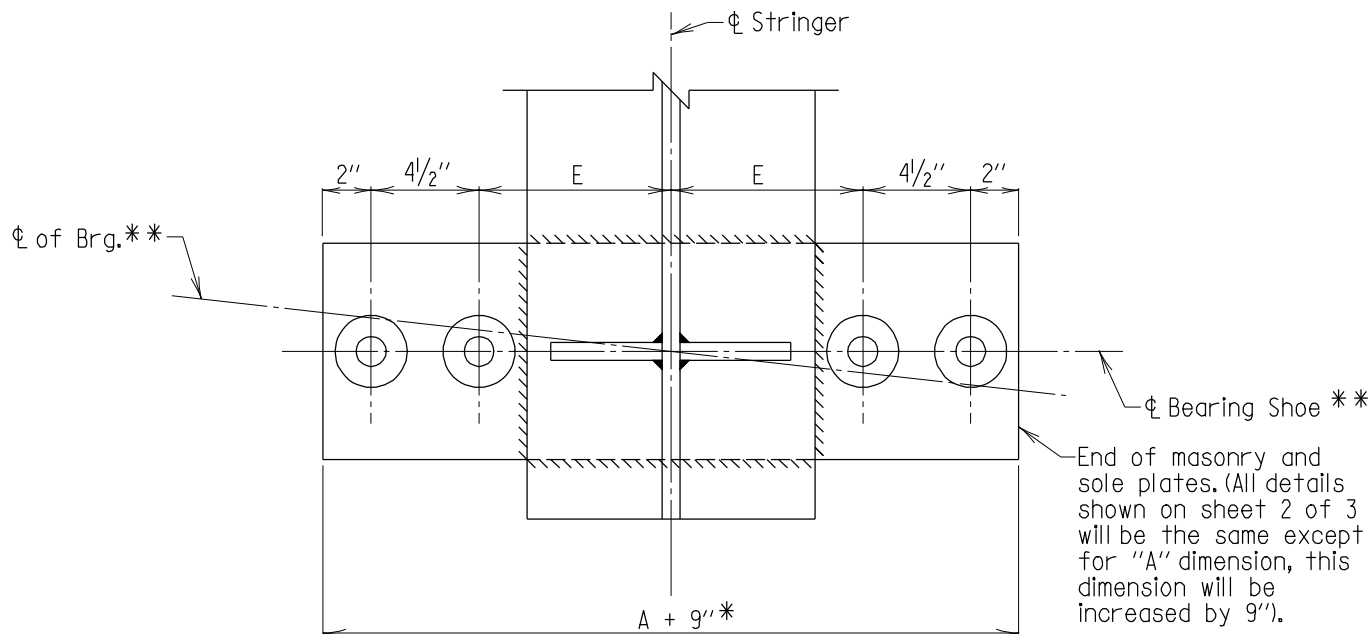
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FIXED BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)



3-13-01
10-9-07
1-21-09
4-21-09

SHEET 2 OF 3



Note:
 1. Nut not shown.
 2. Pad and support not shown.

PLAN
 FOR ALL GIRDERS WITH SPAN LENGTHS 150' OR GREATER
 Scale: $1\frac{1}{2}'' = 1'-0''$

Note:
 To accommodate AASHTO Requirements, bearings for girders 150' or greater shall be extended to accommodate 2 additional bolts. Size and details of all 4 anchor bolts to be the same as that required for 2 bolt bearings.

* Edges may be left as cut or cast.

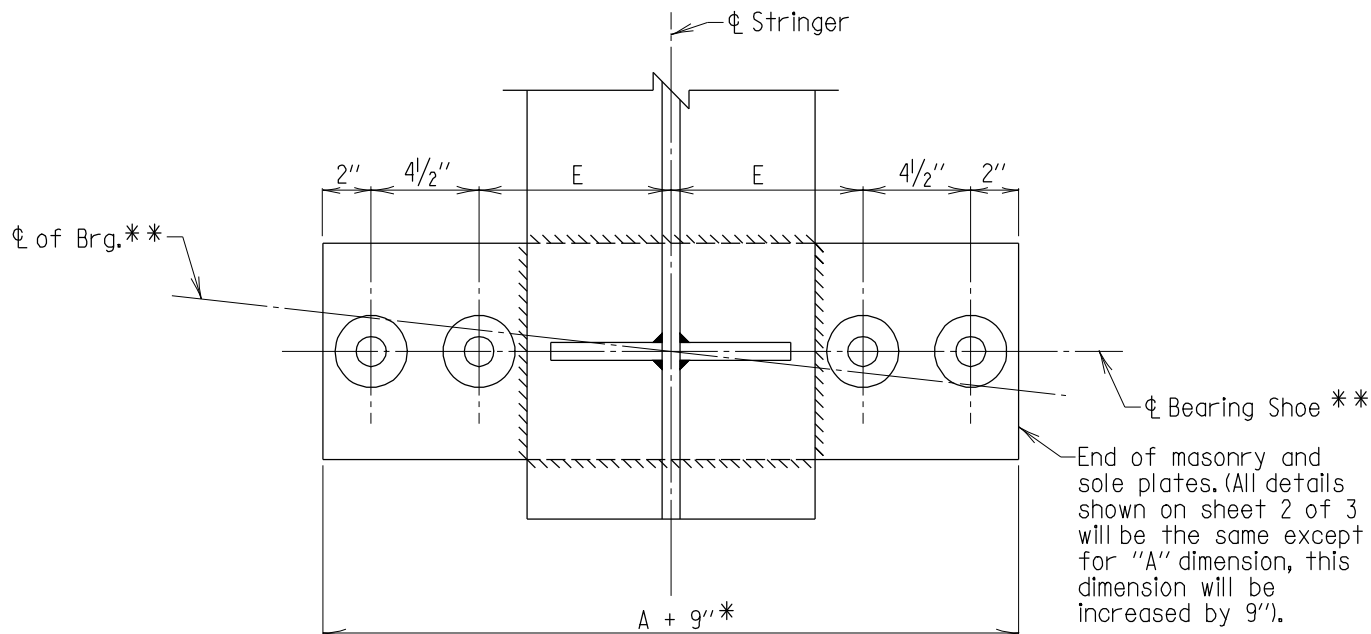
** Where bridge is not skewed, Φ Brg. and Φ shoe are coincident.

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 FIXED BEARING
 MEDIUM LENGTH SPANS
 (GRADE 50 STEEL)

STANDARD NO. BR-SS(9.06)-99-336

SHEET 3 OF 3



Note:
1. Nut not shown.
2. Pad and support not shown.

PLAN
FOR ALL GIRDERS WITH SPAN LENGTHS 150' OR GREATER
Scale: $1\frac{1}{2}'' = 1'-0''$

Note:
Bearings for girders 150' or greater shall be extended to accommodate 2 additional bolts. Size and details of all 4 anchor bolts to be the same as that required for 2 bolt bearings.

* Edges may be left as cut or cast.

** Where bridge is not skewed, Φ Brg. and Φ shoe are coincident.

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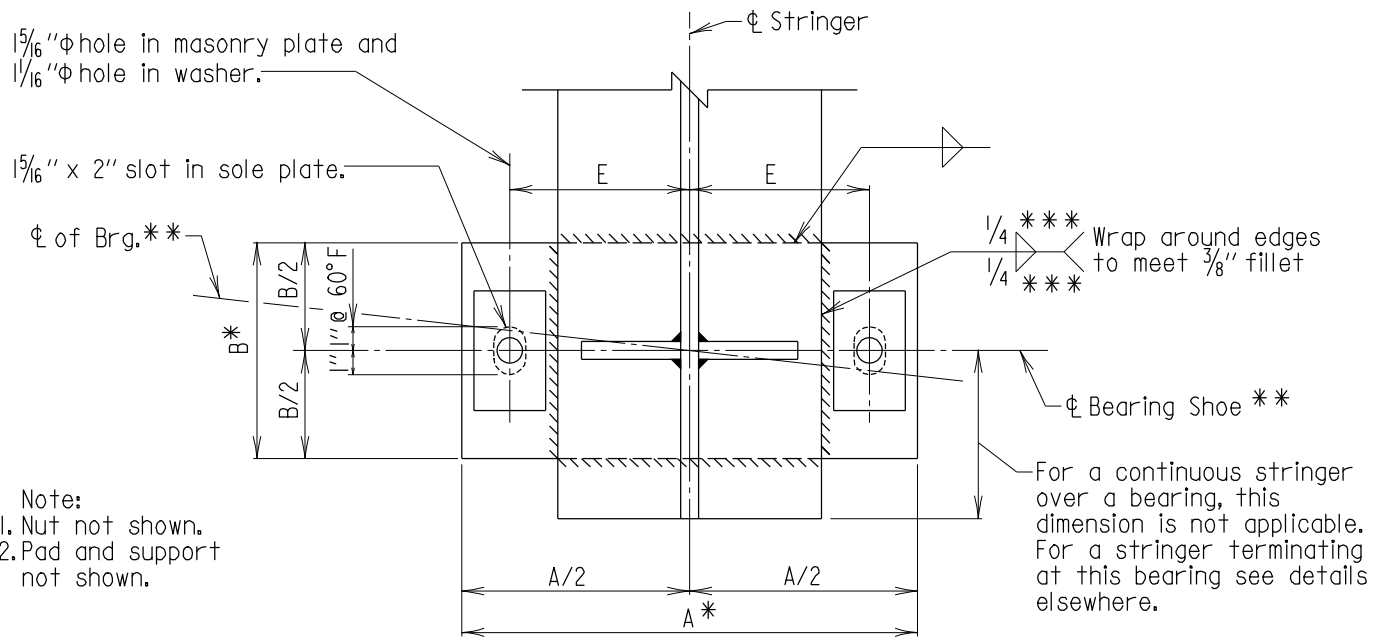
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FIXED BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)



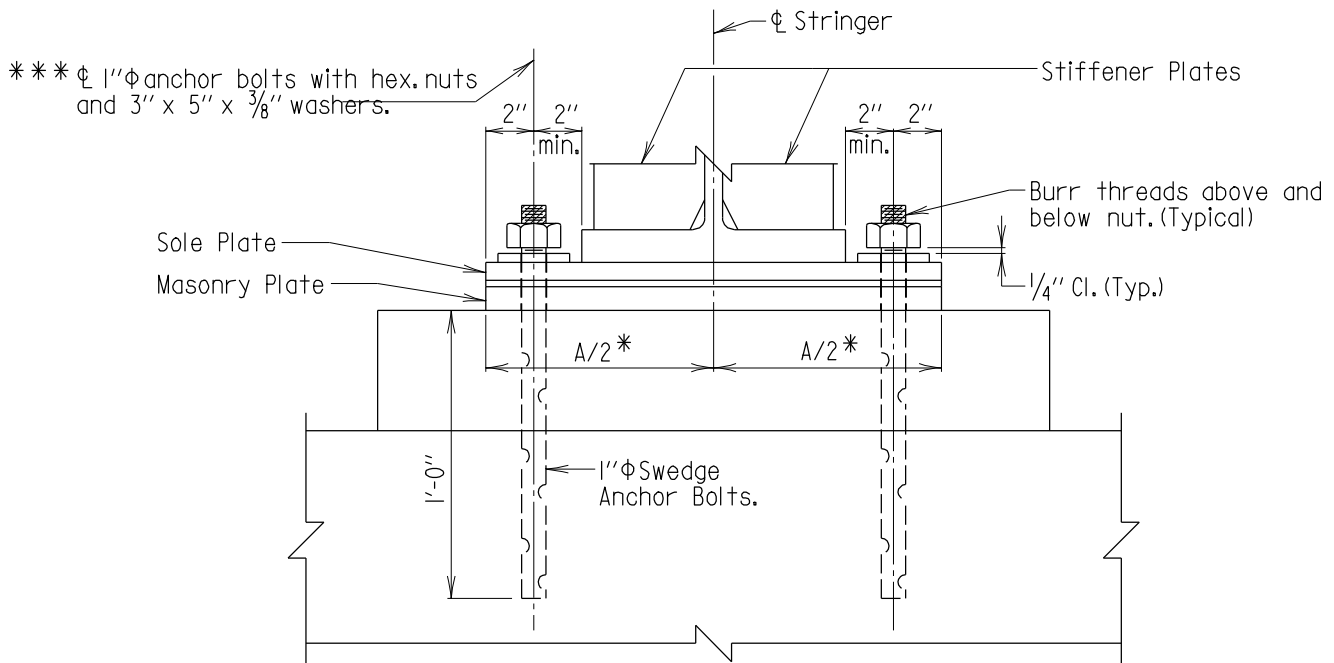
STANDARD NO. BR-SS(9.06)-99-336(L)

SHEET 3 OF 3

SUPER - BEARINGS



PLAN
 Scale: $1\frac{1}{2}$ " = 1'-0"



ELEVATION
 Scale: $1\frac{1}{2}$ " = 1'-0"

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg.
 and ϕ shoe are coincident.

*** Minimums shown. Engineer Shall Design.

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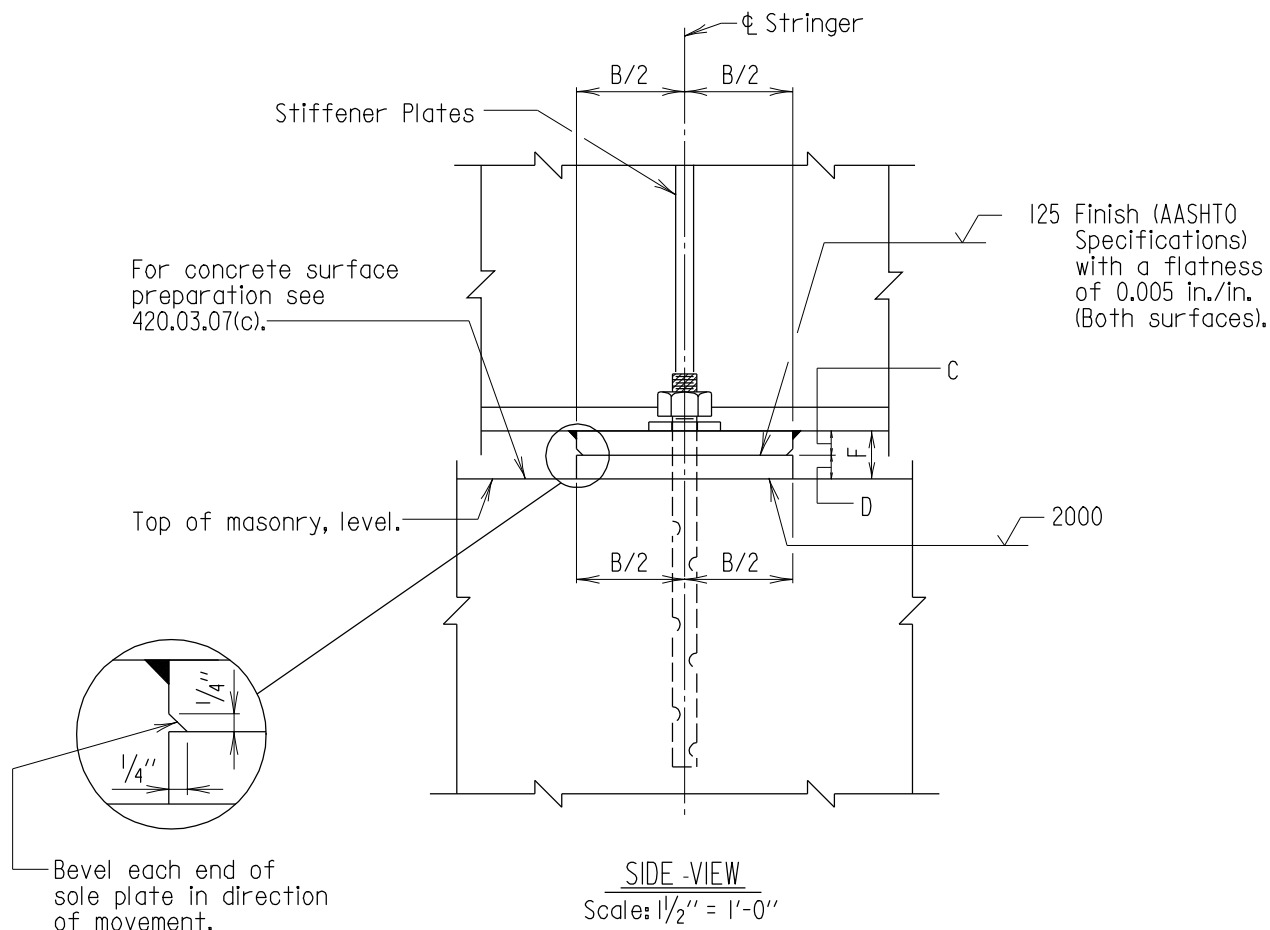
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EXPANSION BEARING
 SHORT LENGTH SPANS
 (GRADE 50 STEEL)

STANDARD NO. BR-SS(9.07)-99-337(L)

SHEET 1 OF 2





DATA SCHEDULE										
Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Loads (Kips)	
	A	B	C	A	B	D	E	F	Vert.	Dead
SE50 - I	17	9	1	17	9	1	6 1/2	2	70	16
SE50 - II	19	9	1	19	9	1	7 1/2	2	85	23
SE50 - III	21	9	1	21	9	1	8 1/2	2	100	34

Note: All dimensions are in inches.

Note:

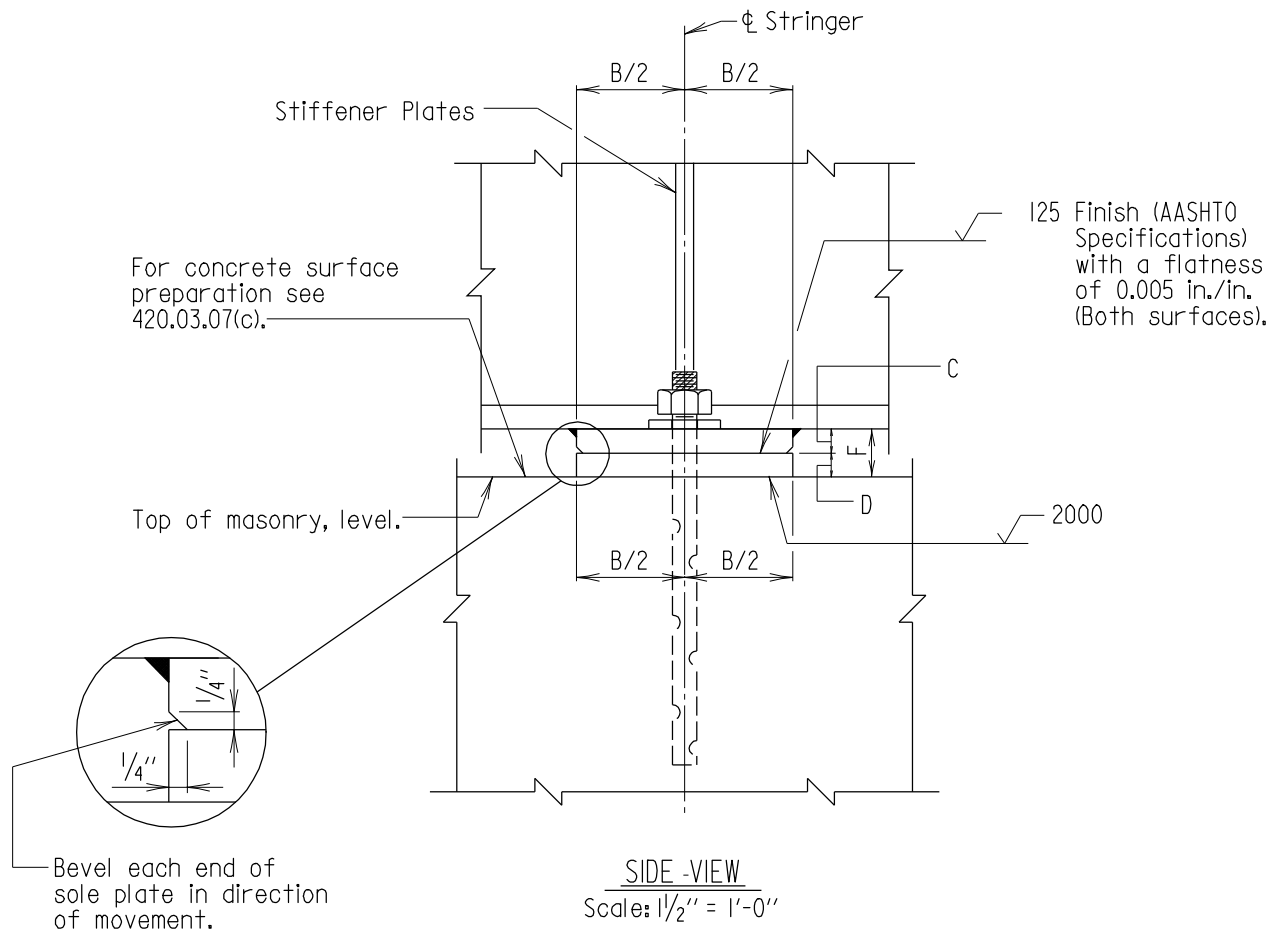
- Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Design Bearing Load 0.7 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at φ of bearing.
- Unless otherwise noted, bearings shall be placed normal to φ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

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STATE OF MARYLAND
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OFFICE OF STRUCTURES
EXPANSION BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.07)-99-337

SHEET 2 OF 2



DATA SCHEDULE									
Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Service Loads (Kips)
	A	B	C	A	B	D	E	F	
SE50 - I	17	9	1	17	9	1	6 1/2	2	70
SE50 - II	19	9	1 1/4	19	9	1 1/4	7 1/2	2 1/2	85
SE50 - III	21	9	1 1/4	21	9	1 1/4	8 1/2	2 1/2	100

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at φ of bearing.
- Unless otherwise noted, bearings shall be placed normal to φ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

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STANDARD NO. BR-SS(9.07)-99-337(L)

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OFFICE OF STRUCTURES
EXPANSION BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)



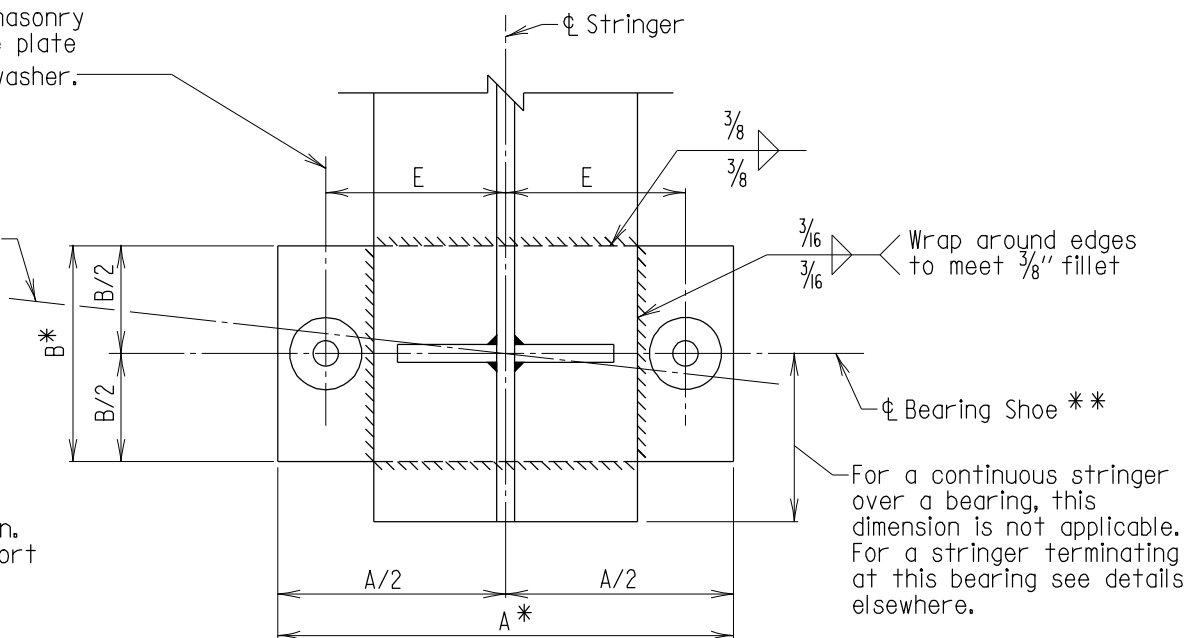
SHEET 2 OF 2

SUPER - BEARINGS

1 5/16" ϕ hole in masonry plate and sole plate
1 1/16" ϕ hole in washer.

ϕ of Brg. **

Note:
1. Nut not shown.
2. Pad and support not shown.

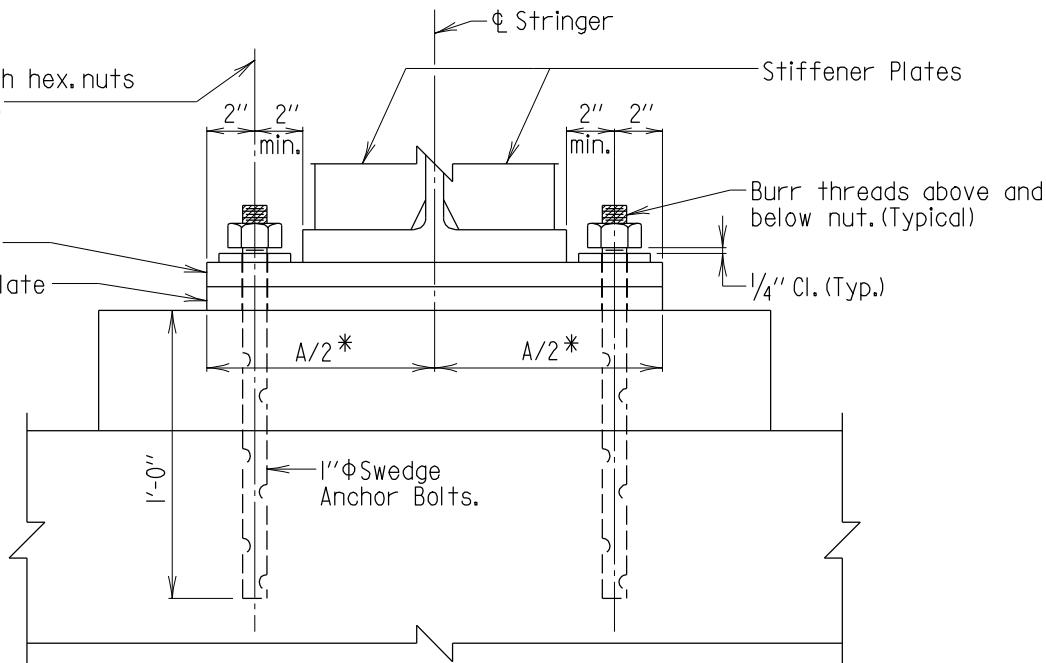


PLAN

Scale: 1 1/2" = 1'-0"

1" ϕ anchor bolts with hex. nuts and 3" ϕ x 3/8" washers.

Sole Plate
Masonry Plate



ELEVATION

Scale: 1 1/2" = 1'-0"

NOTE TO DESIGNER:
Grade 50 bearings are to be used in new bridge projects.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

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FIXED BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

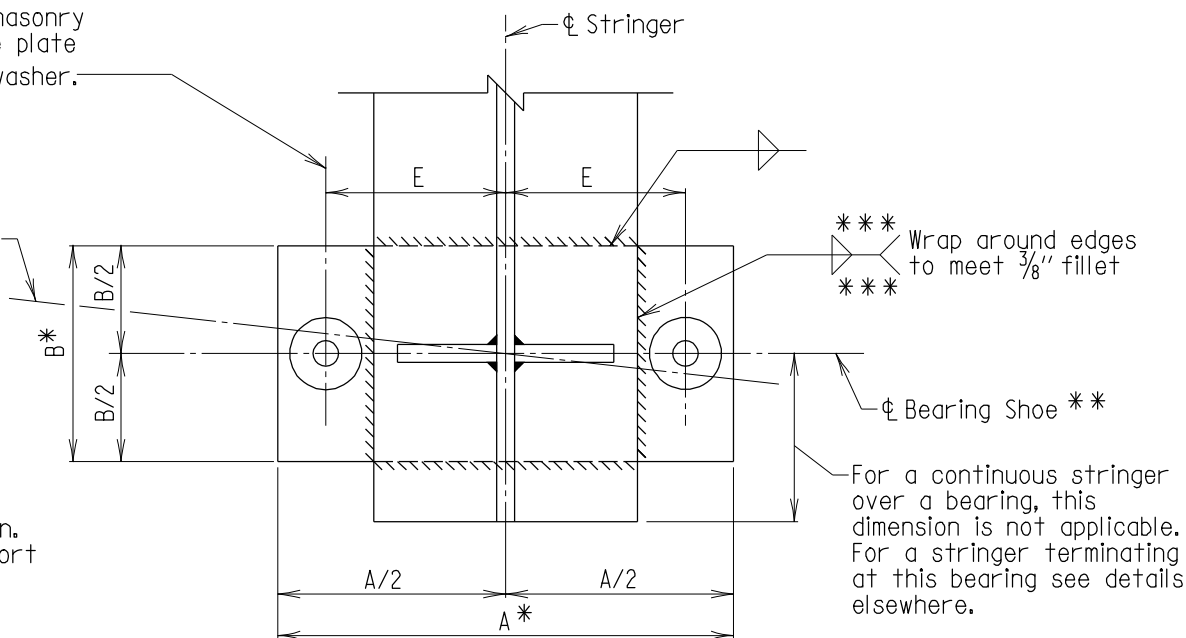
STANDARD NO. BR-SS(9.08)-99-338

SHEET 1 OF 2

1 5/16" ϕ hole in masonry plate and sole plate
1 1/16" ϕ hole in washer.

ϕ of Brg. **

Note:
1. Nut not shown.
2. Pad and support not shown.

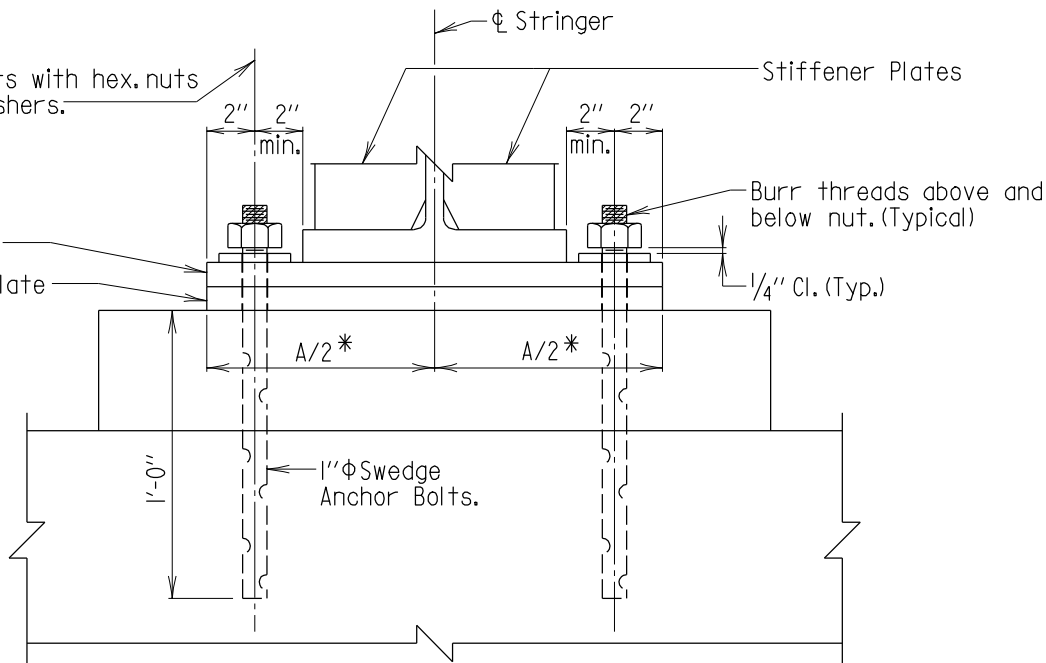


PLAN

Scale: 1 1/2" = 1'-0"

*** ϕ 1" ϕ anchor bolts with hex. nuts and 3" ϕ x 3/8" washers.

Sole Plate
Masonry Plate



ELEVATION

Scale: 1 1/2" = 1'-0"

* Edges may be left as cut or cast.

** Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

*** Minimums shown. Engineer Shall Design.

APPROVAL	
<i>L.S. Friedman</i>	DIRECTOR
OFFICE OF STRUCTURES	
DATE: 11/19/99	
REVISIONS	
SHA	FHWA
11-9-00	.
7-26-06	.
10-9-07	.

FHWA APPROVAL
DATE: .

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

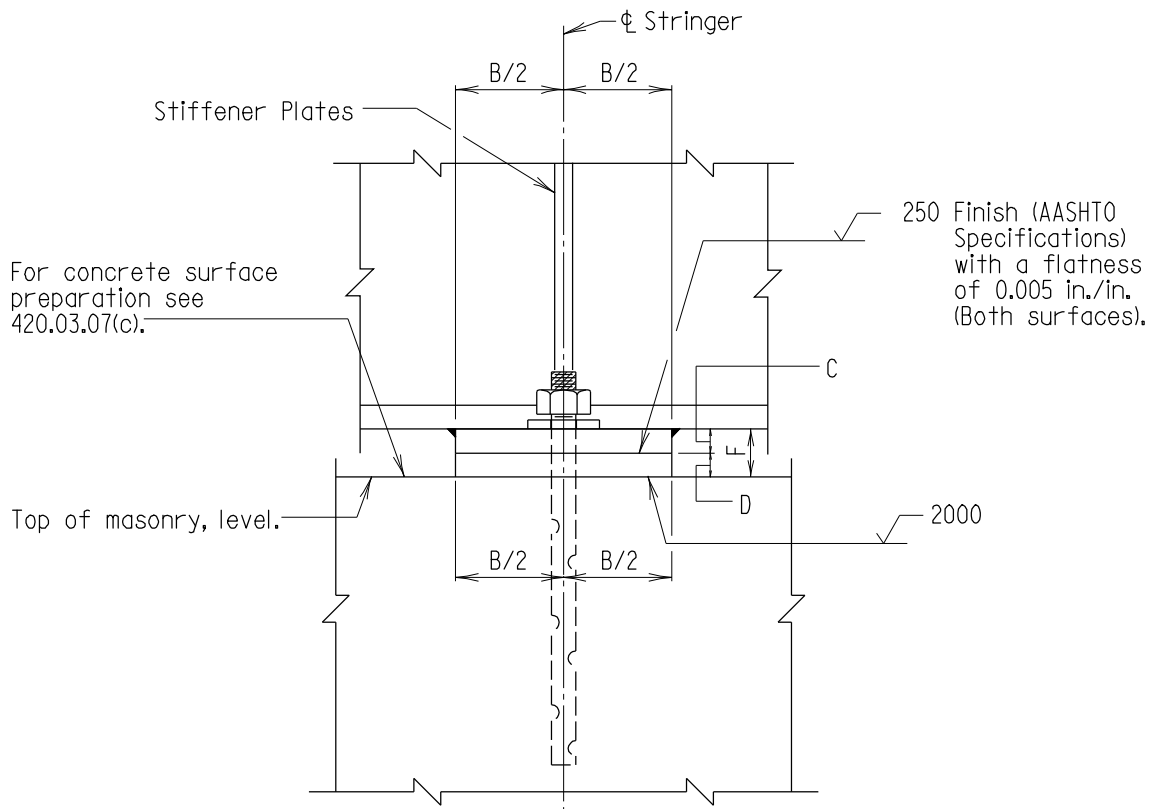
FIXED BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.08)-99-338(L)

SHEET 1 OF 2



SUPER - BEARINGS



DATA SCHEDULE

Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Loads (Kips)	
	A	B	C	A	B	D	E	F	Vert.	Dead
SF50 - I	17	9	1	17	9	1	6 1/2	2	70	16
SF50 - II	19	9	1	19	9	1	7 1/2	2	85	23
SF50 - III	21	9	1	21	9	1	8 1/2	2	100	34

Note: All dimensions are in inches.

Note:

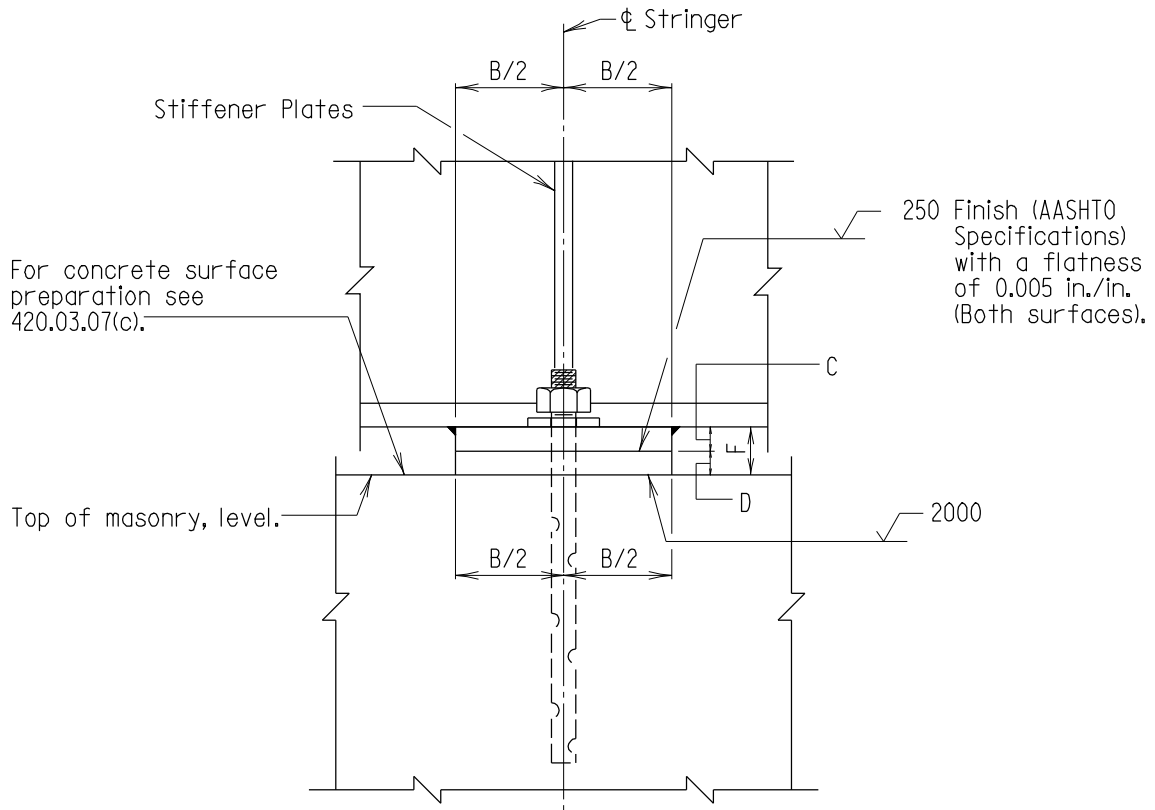
- Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Design Bearing Load 0.7 KSI.
- Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at ϕ of bearing.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

APPROVAL	
<i>L. S. Fisher</i> DIRECTOR	OFFICE OF STRUCTURES
DATE: 11/19/99	
REVISIONS	
SHA	FHWA
1-22-01	.
.	.
FHWA APPROVAL	.
DATE:	.

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES
FIXED BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

STANDARD NO. BR-SS(9.08-99-338

SHEET 2 OF 2



SIDE -VIEW
Scale: 1 1/2" = 1'-0"

DATA SCHEDULE									
Type	Sole Plate			Masonry R			Hole Loc. Hgt.		Service Loads (Kips)
	A	B	C	A	B	D	E	F	
SF50 - I	17	9	1	17	9	1	6 1/2	2	70
SF50 - II	19	9	1	19	9	1	7 1/2	2	85
SF50 - III	21	9	1	21	9	1	8 1/2	2	100

Note: All dimensions are in inches.

Note:

- Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at ϕ of bearing.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
- All anchor bolts and washers shall be unpainted ASTM A 709 Grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

APPROVAL	
<i>L. S. Fisher</i> DIRECTOR	OFFICE OF STRUCTURES
DATE: 11/19/99	
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STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES
FIXED BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)



STANDARD NO. BR-SS(9.08-99-338(L))

SHEET 2 OF 2

SUPER - BEARINGS